

# COMMERCIAL CAR JOURNAL

THE MAGAZINE FOR FLEET OPERATORS

JANUARY 1947



## "Easy does it"—with Reo!

Tight parking places and heavy traffic ease up when Reo trucks and tractors carry the load. More-Load design is the answer. This exclusive Reo feature gives shorter turning radius, greater maneuverability, quicker response to the wheel. And Reo's greater load space per inch of wheelbase is a low-cost, high-efficiency factor on the open road as well as in congested areas.

The dependable, economical performance of precision-built engines—the massive, cold-riveted frames and heavy-duty construction in every chassis part are additional reasons why many operators are standardizing on Reo equipment. Sales and service through nation-wide network of dealers, distributors and factory branches. REO MOTORS, INC., Lansing 20, Mich.

STANDARDIZE  
ON

**REO**

1904 • AMERICA'S TOUGHEST TRUCK • 1947





# TRUCK OPERATORS: save money with trucks that fit your job!

● In buying new equipment, it will pay you to consider *carefully* a truck that will *fit your job*.

With a "Job-Rated" truck—you get time-proven *economy* and dependable *performance*—day after day, year after year!

And naturally, "Job-Rated" trucks *last longer!*

Yes . . . when you buy a "Job-Rated" truck, you have the assurance that every unit—such as engine, clutch, transmission, and brakes—will be engineered and built for "top" performance and maximum economy—with *your* loads, over *your* roads!

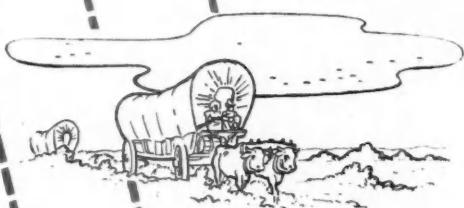
With its wide range of 175 "Job-Rated" chassis models—Dodge can best fit *your* job—save *you* money!

Ask any Dodge owner how well he's satisfied with the economy, performance and long life of *his* Dodge "Job-Rated" truck—and you'll need no further urging to see your Dodge dealer about a "Job-Rated" truck to fit *your* job!

**Only DODGE** builds  
*"Job-Rated"*  
trucks



**DODGE "Job-Rated" TRUCKS** FIT THE JOB!  
LAST LONGER!



# PIONEER AND PACEMAKER

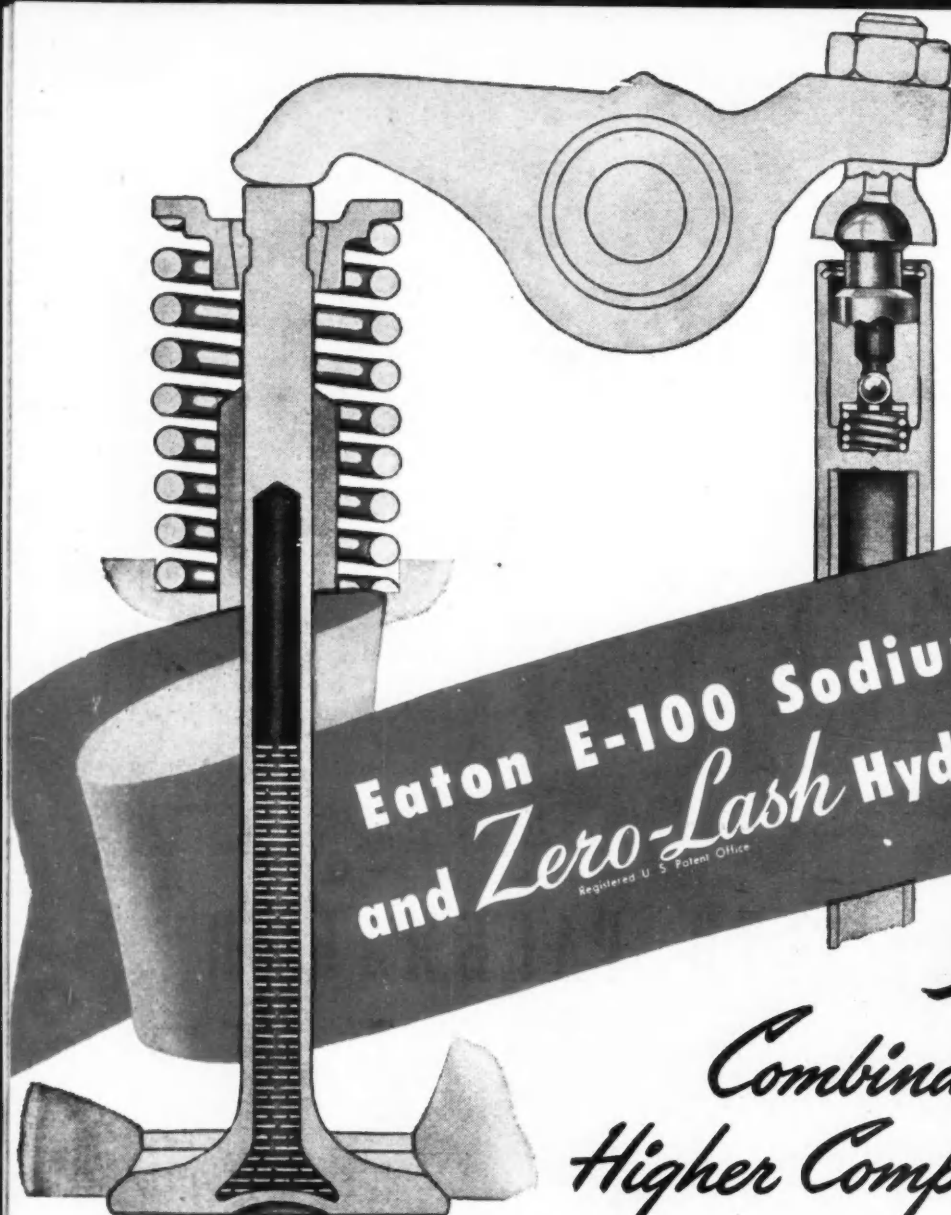
*... in building high-speed diesels*

*... in placing value before volume*

*... in developing a complete parts-service network*



CUMMINS ENGINE COMPANY, INC. • COLUMBUS, INDIANA



**Eaton E-100 Sodium Cooled Valve  
and Zero-Lash Hydraulic Valve Lifter**  
Registered U. S. Patent Office

*Ideal  
Combination for the New  
Higher Compression Engines*

Today's trend toward engines with higher compression ratios to utilize modern fuels involves materially higher operating temperatures, and places a heavier load on valves and valve gear.

The combination of the Eaton E-100 Sodium Cooled Valve and the *Zero-Lash* Hydraulic Valve Lifter insures perfect seating, proper valve timing at all speeds and temperatures, permits lower idling speeds, and adds materially to valve life.



POPPET VALVES • SODIUM COOLED VALVES  
TAPPETS • HYDRAULIC VALVE LIFTERS  
VALVE SEAT INSERTS • ROTOR PUMPS  
TURBOJET ENGINE PARTS

Eaton has anticipated the requirements of the higher compression engines in developing the new E-100 Sodium Cooled Valve faced with Eatonite, and a specially developed type of *Zero-Lash* Hydraulic Valve Lifter for overhead engines.

Eaton engineers will welcome an opportunity to discuss the application of sodium cooled valves and hydraulic valve lifters to engines now in the design stage.

**EATON**

MANUFACTURING COMPANY

WILCOX-RICH DIVISION

9771 French Road

Detroit 13, Michigan





*Quality*

CHEMICAL PRODUCTS

JANUARY, 1947

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3

COMMERCIAL CAR JOURNAL, Vol. LXXII, No. 5. Published monthly by Chilton Co., N. W. Cor. Chestnut & 56th Sts., Philadelphia 39, Pa. Subscription price: United States and Possessions, Mexico and Latin American Countries, \$5.00 per year; Single copies 50¢, except April issue, \$1.00. Canada and Foreign, \$10.00 per year. Acceptance under the Act of June 5, 1934, authorized December 18, 1934.

# REDUCE OPERATING AND MAINTENANCE

# COSTS!

**I**N the job of keeping automotive operating and maintenance costs low, don't overlook the importance of Effective Lubrication. It's vital! And you can assure it by using *Texaco*.

Chassis parts, for example, last longer and function better lubricated with *Texaco Marfak*. This unique lubricant holds together. It stays where you put it — won't squeeze out under heavy loads, won't jar out under hammering service. It also seals out dirt and moisture — protects parts for extra hundreds of miles. That's why —

*More than 250 million pounds of Marfak have been used to date!*

On wheel bearings, use *Texaco Marfak Heavy Duty*. It stays in the bearing and off the brakes — seals out dirt and moisture, protects longer, and

requires no seasonal re-packing.

Engines lubricated with *Texaco D-303 Motor Oil* stay *clean* — efficient, powerful, and misers in fuel consumption.

Lubricate with *Texaco* and cut costs all around! For Texaco Products and Lubrication Engineering Service, call the nearest of the more than 2300 Texaco distributing plants in the 48 States, or write The Texas Company, 135 E. 42nd St., New York 17, N. Y.

**TEXACO IS  
PREFERRED**  
in every field  
of transportation

Tune in . . .  
TEXACO STAR THEATRE  
presents the NEW  
EDDIE BRACKEN SHOW  
every Sunday night.  
Metropolitan Opera broad-  
casts Saturday afternoons.



# TEXACO



### ON THE HIGHWAYS



More bus chassis and wheel bearings in the U. S. are lubricated with Texaco Marfak than with any other brand.

### IN THE AIR



More revenue airline miles in the U. S. are flown with Texaco Aircraft Engine Oil than with any other brand.

### ON THE RAILS



More Diesel and Steam locomotives as well as railroad cars in the U. S. are lubricated with Texaco than with any other brand.

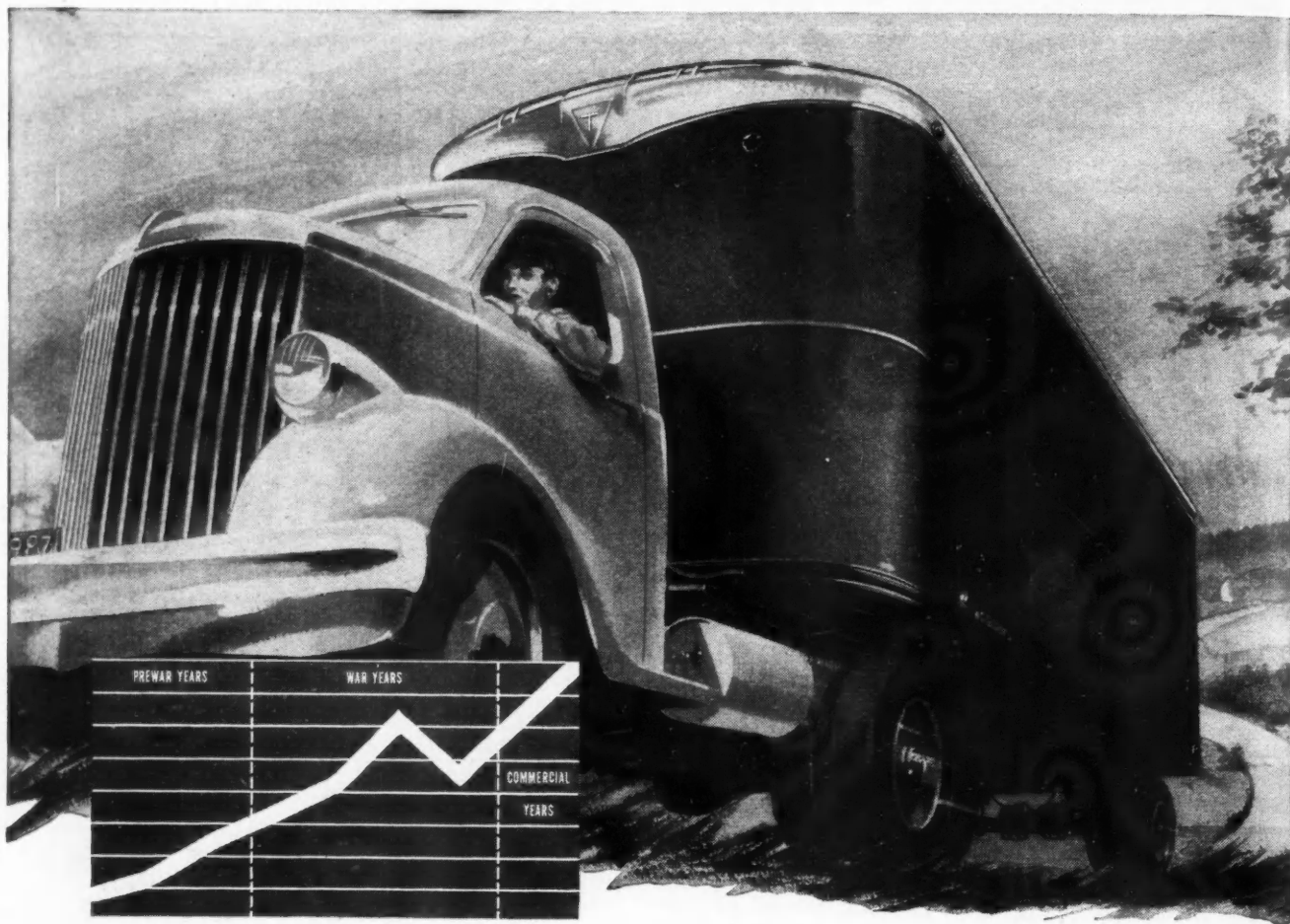
# Lubricants and Fuels

FOR THE TRUCKING INDUSTRY

JANUARY, 1947

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## ***Trailmobile Sales are up 9 times over pre-war years***

Everywhere sharp-penciled trailer users are switching to Trailmobile. And, there are many good reasons! But they all add up to more net profit for operators like you.

Look at this great new Trailmobile before you buy. You'll see the many structural improvements which mean bigger payloads, lower upkeep and operating costs. You'll see why Trailmobile is the easiest pulling ever.

C. W. Zimmerman chose to use Trailmobile when he won the '46 A. T. A. Roadeo Championship—"because it handles easy and well."

Back of all this is a strongly financed company with sound policies—staffed by men of vision—men with one never changing idea! This idea is to design and build, in plants strategically located across the United States and Canada, a product that gives better service to trailer users.

Wherever you are—you'll find proof of this policy, and the friendly people who practice it—in any of the 73 Trailmobile Service Centers, one of which is "right in your own backyard."

THE TRAILMOBILE COMPANY • CINCINNATI 9, OHIO

## ***The Trend is to TRAILMOBILE***

**HERE'S WHAT  
ORVAL J. LINDELL  
Superintendent of Maintenance,  
Consolidated Forwarding Co., Inc.  
SAYS ABOUT  
PERFECT CIRCLE'S  
FLEET SURVEY PLAN**



**CONSOLIDATED FORWARDING COMPANY, Inc.**  
The ONLY Overnight Service to and from Milwaukee • • •

1313 NORTH 7th ST. • • • CHESTNUT 3830  
ST. LOUIS, (9) MISSOURI  
November 17, 1946

I. M. SCHIEF, President  
I. E. SCHIEF, Vice-President  
W. J. RICHARDSON, Secretary

The Perfect Circle Company  
Hagerstown, Indiana

Gentlemen:

We, at Consolidated Forwarding Company, have been using the Perfect Circle's Fleet Survey Plan for more than two years, and following this plan have achieved splendid results by eliminating all guesswork in the selection of proper piston rings for our over-the-road units whenever a major overhaul or a re-ring between overhauls has been performed.

The Fleet Survey Plan has also been the yardstick 100% in selecting the proper rings for the forty-six (46) city pickup units known as Triangle Express Company.

On our over-the-road equipment, mileages of 125,000 have been a frequent average after re-bore and new pistons with Perfect Circle Rings; then another forty to sixty thousand miles have been achieved with a re-ring job selected from the Fleet Survey Plan before another major overhaul is necessary.

Sincerely yours,

CONSOLIDATED FORWARDING CO.

*Orval J. Lindell*

O. J. LINDELL  
Superintendent of Maintenance

TERMINALS  
St. Louis, Mo.  
Springfield, Mo.  
Joplin, Mo.  
Indianapolis, Ind.  
Chandlers, Ohio  
Springfield, Ill.  
Hennepin, Minn.  
Chicago, Ill.  
Waukegan, Ill.  
Kenosha, Wis.  
Racine, Wis.  
Milwaukee, Wis.  
Tulsa, Okla.  
Oklahoma City, Okla.

More than 1,400 fleets have already substantially increased road time, cut operating and maintenance costs, through the use of Perfect Circle's *Fleet Survey Plan*.

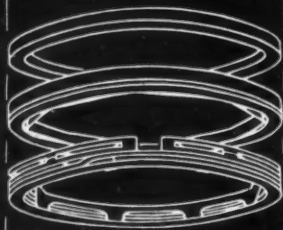
Let our experts tell you about this individualized and highly successful service. For full information on the Perfect Circle *Fleet Survey Plan*, simply call your nearest Perfect Circle distributor, or write The Perfect Circle Companies, Hagerstown, Indiana, U. S. A., or Toronto, Ontario, Canada.

**Restore Power...  
Save Gas...  
Save Oil with...**

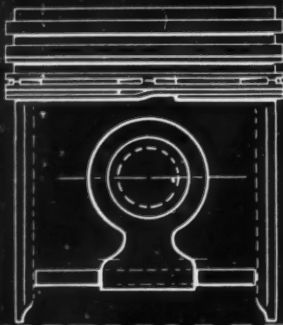
**PERFECT  
CIRCLE PISTON  
RINGS**



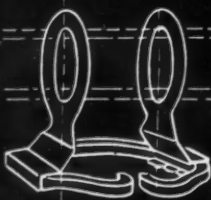
# When Pistons Sing, "Ol' Rockin' Chair's Got Me"



RAMCO 10-UP RINGS stabilize the head of the piston, as well as control blow-by and oil, without excessive pressure, through their Spiro-Seal and Double Life principle of construction.



RAMCO SKIRT EXPANDERS. When pistons rock and slap, usually the skirt has collapsed away from the wall. Then rings wear barrel-faced, and blow-by and oil waste follow. Ramco Skirt Expanders restore the pistons to their original size and shape so the piston rides true. In stabilizing pistons, they work at the point of collapse, at right angles to the piston pin.



## Stabilize the piston... *DO THE JOB RIGHT!*

Stabilizing the head of the piston is the function of Ramco 10-up rings—stabilizing the skirt is the work of Ramco Piston Expanders. Piston stabilization is fundamental to the Ramco method of Re-Powering. Ramco pioneered it . . . proved it . . . engineered its development. Today, as never before, engines need complete piston stabilization as provided by Ramco

rings and expanders. Recommend and install both on every job; then you can be sure of doing the complete job, and doing the job right! Remember—the jobs you do right win MORE jobs to do! See your Ramco jobber . . . Ramsey Corporation, 3710 Forest Park Blvd., St. Louis, Mo. Factories: St. Louis; Fruitport, Mich.; Toronto, Canada.

**RAMCO** *10 up* **RE-POWER** *Ring*

PROVEN BEST FOR ALL TRUCK AND FLEET REPOWERING JOBS...RE-BORE OR RE-RING

Copyrighted 1946 by Ramsey Corporation  
Trademarks Reg. U. S. Pat. Off.



# CHAMPION

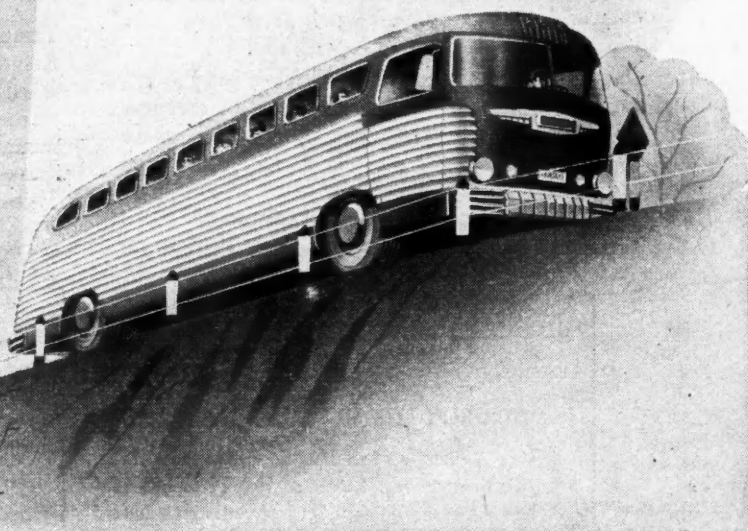
DEPENDABLE

AMERICA'S FAVORITE SPARK PLUG



FOR LOW COST  
DEPENDABLE TRANSPORTATION

The prime concern of the motorized transportation field is, and always *must* be, keeping its rolling stock *rolling*. What powerful testimony it is, then, when the vast majority of buses and trucks use only dependable Champion Spark Plugs . . . one more reason why, today, Champion is America's Favorite Spark Plug!



Listen to the CHAMPION ROLL CALL, Harry Wismer's fast sportscast every Friday night, 9:55 EST over the ABC network . . . CHAMPION SPARK PLUG COMPANY, TOLEDO 1, OHIO

JANUARY, 1947

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9



Cutaway view of Timken Two-Speed Final Drive with Easy-POWER Shift. The Timken Easy-POWER Shift unit may be either

vacuum or compressed air actuated. On heavy-duty axles, it is front-mounted operating through a bell crank inside the housing.

## Built-in muscles do your shifting!

YOU'RE LOOKING at the Easy-POWER Shift mechanism in a Timken Two-Speed Axle.

Here are mechanical muscles that leap into action at the flick of a finger. A momentary release of the accelerator pedal, and the strong-arm work of shifting axle gears is done for you—instantly, positively!

Sure—this Timken Easy-POWER Shift is big, tough and strong. But best of all, it's *built-in* as an *integral part* of the axle—not simply tacked on to the outside where it would be exposed to water, ice, dust, and flying gravel. What's more, it is lubricated by the gear lubricant—special lubrication is never required.

Only Timken gives you *built-in* power shifting—

with no outside connecting rods or linkage to go haywire. Timken's simple, rugged, *built-in* construction pays off in more efficient shifting, lower maintenance costs and longer life.

Timken Two-Speed Double-Reduction Axles with Easy-POWER Shift make it child's play to split transmission gears and get just the right gear combination to meet any speed, load or road condition—in a split-second. To get *all* the advantages of two-speed final drive for your new vehicles, be sure you specify Timken Two-Speed Axles with Built-in Easy-POWER Shift.

### DOUBLES GEAR COMBINATIONS

The Timken Two-Speed Axle supplies the missing rungs in your ladder of truck performance—bridges the big gaps between ratios provided by the "single-speed" axle. You get 8 speeds forward instead of 4, 10 instead of 5, 12 instead of 6, depending upon the number of transmission speeds.



# TIMKEN AXLES

THE TIMKEN-DETROIT AXLE CO., DETROIT 32, MICH.  
WISCONSIN AXLE DIVISION • OSHKOSH, WIS.  
TIMKEN AXLE BRAKE DIVISION • DETROIT 32, MICH.



**This truck has made 400,000 miles  
without engine trouble...with**

**Stanolube HD**



The William Klipsches, Sr. and Jr., of the William Klipsch & Son Coal Company, St. Louis, Missouri, talk over the splendid performance of their 25-ton hopper-type truck.

In the William Klipsch & Son Coal Company fleet of 19 trucks many have gone more than a million miles and are still going strong. Going strong with tough, dirty, grinding work—hauling coal, load after heavy load, day-in and day-out.

In this fleet there is one particularly hard-working unit. It's a specially-designed, 25-ton, hopper-bottom, coal truck. When this truck was put into service, Mr. Klipsch decided to try a heavy duty, detergent-type motor oil. He felt that such an oil would help cut maintenance on his older trucks and ward off trouble in the new and vitally important 25-ton unit. He picked Stanolube HD.

Results have been excellent. In the older trucks, distance between overhauls has been increased to 150,000 miles. Engines show complete lack of sludge and almost

no varnish. And the special hopper truck has lost no time due to faulty engine performance in well over 400,000 miles of steady daily driving.

Many unusual records like this have been made by fleets using Stanolube HD. You can find out for yourself how Stanolube cuts maintenance costs and delays, just by asking a Standard Oil Automotive Engineer to test it in one of your hard-working trucks. And this Engineer stands ready at any time to help you set up a preventive maintenance plan designed to get maximum life and power from every unit in your fleet.

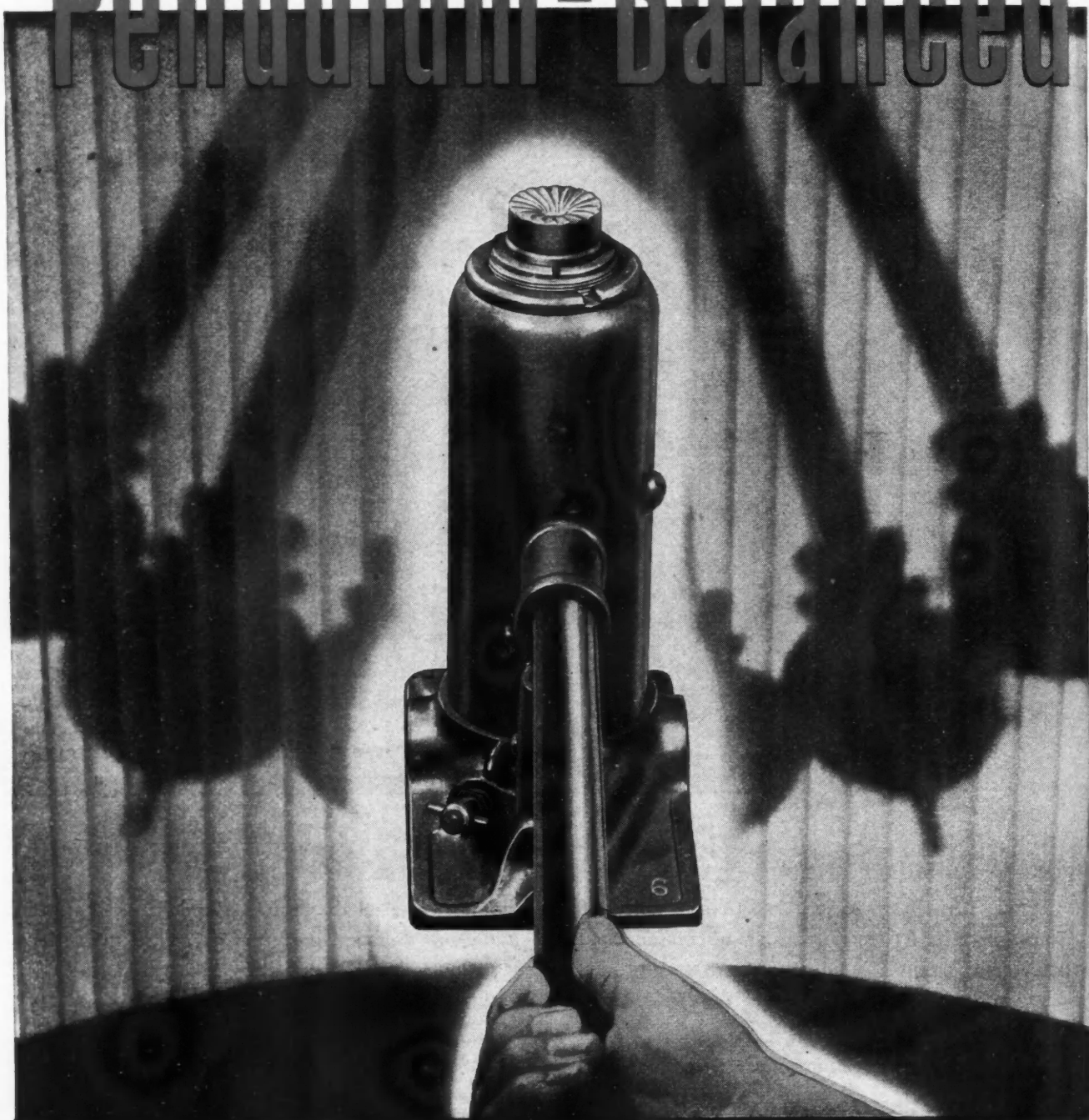
Just write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois, for the Engineer nearest you.

**STANDARD OIL COMPANY (INDIANA)**

**STANDARD  
SERVICE**



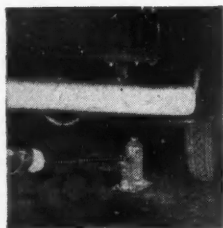
# Pendulum-Balanced



# WALKER

# for easy positioning

## WALKER *KNOW-HOW* KEEPS SERIES 900 AUTOMATICALLY UPRIGHT ON JACK HANDLE



It's a tough job at best to properly "position" a portable hydraulic jack under the lifting point. About the only way to do it is get down and get under. But when a man has to wriggle 'way, 'way under on his elbows and his knees, it's extra-hard—on his disposition and on your schedule.

To simplify and speed-up "positioning," Walker engineers have located the handle socket on the Series 900's right in the center of the jack and well above the center of gravity. Whenever you lift one of these famous tool box jacks by the handle, it's automatically and always perpendicular. This *Pendulum-Balance* makes for easy, time-saving, temper-saving "positioning."

Science and engineering alone can't put into a jack such practical features as *Pendulum-*

*Balance*. They are the result of *Know-How* acquired from many years of building quality products. More than three decades in the jack business has given Walker this *Know-How*. And it's the reason Walker leads in jacks.

THE FAMOUS WALKER  
SERIES 900  
PORTABLE HYDRAULIC JACKS,  
From 1½ to 50 tons capacity



WALKER MANUFACTURING COMPANY OF WISCONSIN • RACINE, WISCONSIN  
Also Makers of Exhaust Silencers and Electric Lifts

# LEADS IN JACKS

FOR ENGINES THAT ARE  
**OIL-THIRSTY**



GET  
**Pedrick**  
"HEAT-SHAPED"  
PISTON RINGS

● Do your trucks have to fill up with oil at practically every stop? Is it a quart or two here and a quart or two there . . . all the time! If so, recondition with "Heat-Shaped" piston rings. They give the greatest assurance of lower oil consumption, more miles per gallon of gas, more power and pick-up, and longer engine life. Only PEDRICK piston rings are "Heat-Shaped"—a process that produces exactly the right tension around the entire circumference of the ring. In guaranteed Engineered Sets for every make and model. WILKENING MANUFACTURING CO., Philadelphia 42, Pa. In Canada: Wilkening Manufacturing Co. (Canada) Ltd., Toronto.



Ordinary water is the only thing needed to keep these stainless steel trailers shiny and new-looking throughout their long life span. Painting or refinishing is never necessary with corrosion-resistant stainless steel equipment.



# Enduro Pays in many ways \*

Easy to Clean  
Resistant to Rust  
and Corrosion  
Greater Payload  
Capacity  
Strong—Long Lasting  
\* Eliminates Painting  
Light Weight  
Easy to Fabricate  
Universal Acceptance  
Low Ultimate Cost

Any way you look at it, Republic ENDURO Stainless Steel offers profitable advantages to operators of truck and trailer fleets.

Consider equipment appearance and maintenance costs. Unlike equipment made of less-resistant materials, truck and trailer bodies made of tough, long-lasting ENDURO always remain sparkling and new-looking . . . never require painting or refinishing . . . never deteriorate due to rust and corrosion.

Add the fact that you can't beat stainless steel for impact resistance, and you'll understand why more and more cost-wise fleet operators are specifying ENDURO on their new equipment orders. For complete information, write to:

**REPUBLIC STEEL CORPORATION**  
*Alloy Steel Division • Massillon, Ohio*  
**GENERAL OFFICES • CLEVELAND 1, OHIO**  
Export Department: Chrysler Building, New York 17, N. Y.

## Republic



## ENDURO STAINLESS STEEL

REG. U. S. PAT. OFF.

Other Republic Products include Carbon and Alloy Steels—Pipe, Sheets, Strip, Plates, Bars, Wire, Pig Iron, Bolts and Nuts, Tapping

# "S-M-O-O-T-H and E-A-S-Y..

*That's What I Like About*

## **HYDRO\*MASTERS**

by

### **ROADMASTER**

*and with STOP-SAFETY  
I Can Make TOP TIME"*

"Sure HYDRO\*MASTERS give me the *quick, non-fading power* to stop when we've got to stop. I can always count on *that . . .* but what I like most about HYDRO\*MASTERS is the 'smooth as silk' braking they give me on the routine slow-downs and stops we make hundreds of times on every trip . . . those soft-smooth, non-grabbing stops I make with e-a-s-y pedal pressure.

"Plenty of smooth, easy, safe Stopping Power—and the driver doesn't have to kick his leg off—that's HYDRO\*MASTER!"

★ ★ ★

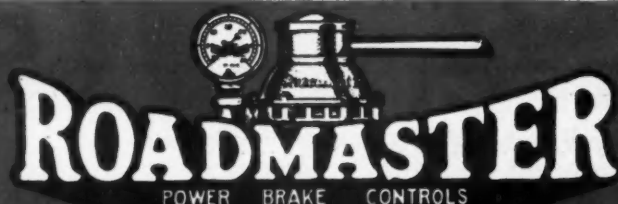
In years of prewar, war and postwar engineering, Roadmaster has learned how to bring any truck, trailer or bus, loaded or not, to a smoothly graduated stop—without chattering, grabbing or "flat-tiring".

The answer is HYDRO\*MASTER Reciprocating Hydraulic Brake Controls. HYDRO\*MASTERS smoothly multiply pedal power up to any brake-drum pressure your load and road call for. Just cut HYDRO\*MASTER into the hydraulic line and let it take over . . . no adjusting or lubricating.

## **ROADMASTER PRODUCTS CO.**

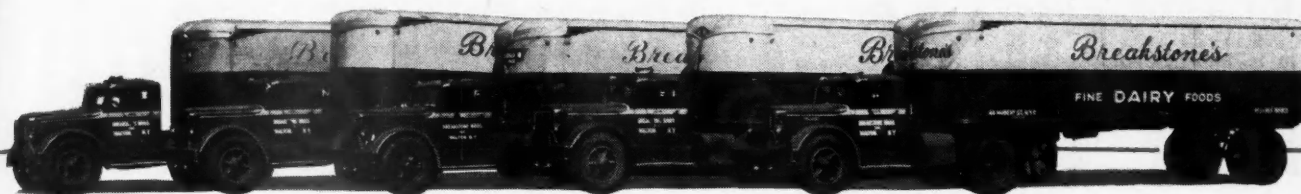
2316 South Flower Street  
Los Angeles 7, California

Center and Chestnut Streets  
Valparaiso, Indiana



This revolutionary new improvement in commercial vehicle brake control is of vital dollar-saving interest to all commercial vehicle manufacturers, operators and drivers—and to brake equipment distributors and service men who want a top-notch profit line.

Distributorships still available in several important cities. Write for full information today.



## ANOTHER OPERATOR WHO BUYS AUTOCARS "BY THE FLEET"

The confidence that Breakstone Brothers, Inc. have in Autocar Trucks is best expressed by the fact that they purchase these great trucks a fleet at a time. Five tractors, operating from the company's headquarters at Walton, New York, haul thirty-foot refrigerated semi-trailers to distant cities every day. Autocar Trucks cost more, because they're worth more!



### AUTOCAR TRUCKS

ENGINEERED FOR HEAVY DUTY

Manufactured in Ardmore, Pa. • Factory Branches and Distributors in Principal Cities



# Sharp as a Hound's Tooth

**AND CUT TO STAY THAT WAY FOR SAFETY'S SAKE**

The saddle of a Blackhawk Hydraulic Jack is cut to bite in for a sure grip on a load. And these teeth never get dull. They are milled and heat treated — not forged or cast. When you need a Jack — buy the best — buy a Blackhawk from your Blackhawk Jobber.

A Product of **BLACKHAWK MFG. COMPANY**, Dept. J1117, Milwaukee 1, Wis.



# BLACKHAWK

*A development of*  
**B.F. Goodrich**  
**FIRST IN RUBBER**



*Auto-Railer is a registered trade mark of Evans Products Co.*

## New kind of tire rides on rails or roads

**O**LD railroad hands thought they were seeing double when this vehicle first drove down the highway, turned onto the railroad tracks and kept right on going. This new Evans Auto-Railer unit is equally at home on the rails or on the highway.

Before the vehicle made its first train trip, many problems had to be solved. Important among them was this: how and where to get tires that would do a regular highway trucking job, yet would stand the gaff of riding steel rails. No such tire existed. So designers put it up to B.F. Goodrich. The tire you see above is the answer.

It has an extra-strong body to carry

heavy loads. It has a special tread design that gives unusual tractive and braking ability in all kinds of weather. In fact, these tires are more than  $3\frac{1}{2}$  times as effective on rails as steel wheels under like conditions.

With the tire problem solved, Auto-Railers go most anywhere — cross country to pick up supplies, down the rails to deliver them. Even small locomotives have been built on this principle. Savings to railroads are tremendous. One vehicle and one crew often do the work required of rail equipment and a truck — two crews.

This development of a special tire for a special purpose is typical of B.F. Goodrich research. For B.F.

Goodrich engineers have developed tires for many special uses—from coal mines to oil fields, from logging camps to powder plants. They've brought about constant improvement in tires for everyday jobs, too, on trucks, cars, airplanes, and farm equipment. When you buy from the B.F. Goodrich dealer, you are assured of tires backed by this policy of constant improvement. *The B.F. Goodrich Company, Akron, Ohio.*

*Truck Tires* BY  
**B.F. Goodrich**

# Every CAR & TRUCK NEEDS THIS REVOLUTIONARY FUEL FILTER

IT'S THE Pulsation DAMPER  
THAT MAKES THE DIFFERENCE



Installed  
in a Jiffy

Patents  
Applied For

## AIRTEX GASOLINE FILTER with Pulsation DAMPER

**ATTRACTIVE DISPLAY  
ASSORTMENT OF 12  
FILTER-DAMPERS**  
Contains 5 types neces-  
sary to service over 90%  
of motor vehicles.



SELL ONE WITH EVERY  
CARBURETOR, FUEL PUMP and TUNE-UP JOB



The only filter equipped with PULSA-  
TION DAMPER, self-cleaning action, and  
porous metal filtering element.

- Acts as shock absorber in the fuel line, overcoming fuel pump pressure pulsations and delivering a SMOOTH, STEADY FLOW OF GASOLINE to the carburetor.
- Removes dirt, lint, water, abrasive particles, and other foreign matter from the gasoline.
- Prevents motor failure due to carburetor clogging and flooding. Reduces wear and tear on carburetor, engine and fuel pump.

ORDER FROM YOUR JOBBER

## AIRTEX AUTOMOTIVE DIVISION

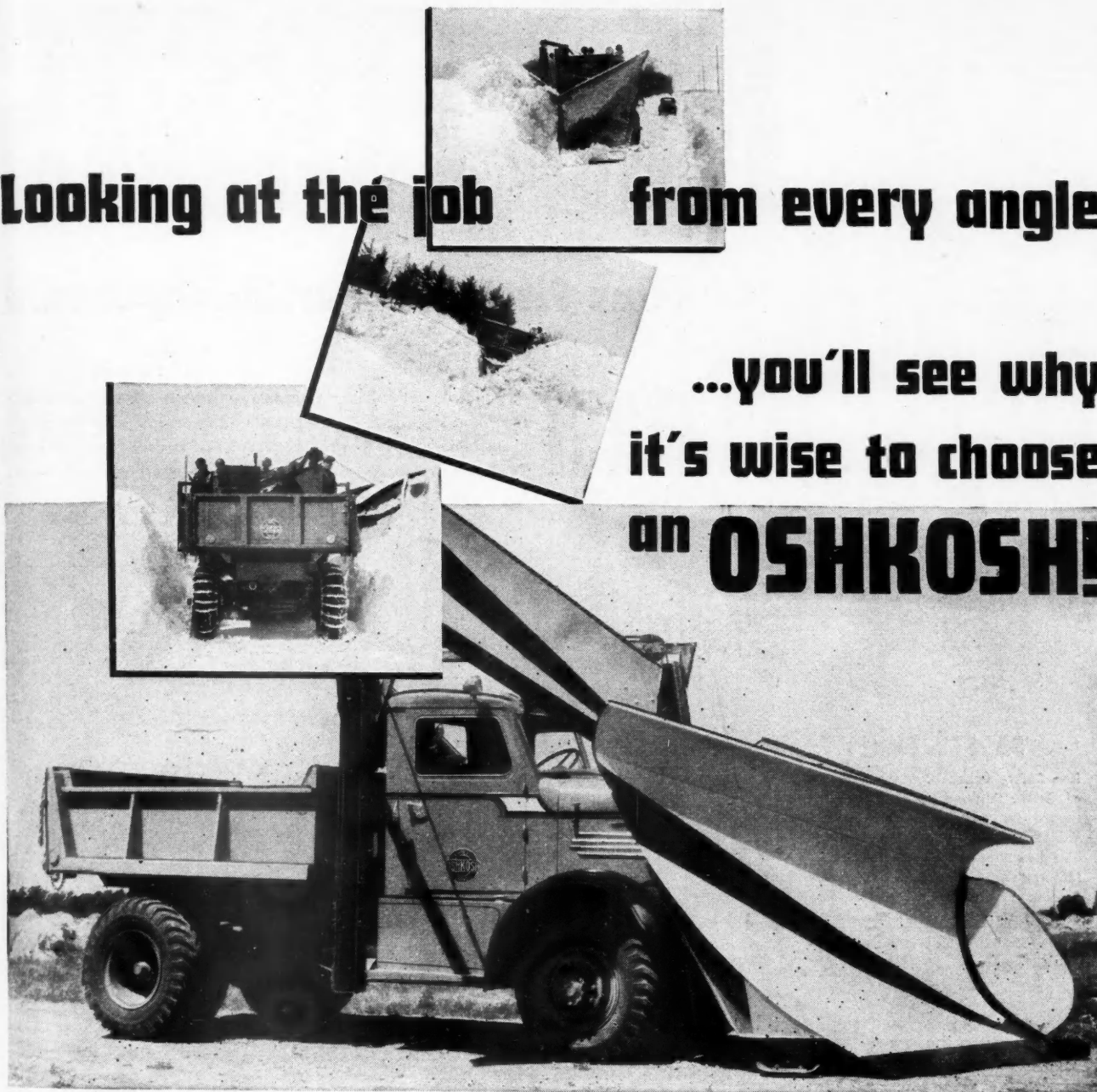
Chefford Master Mfg. Co., Inc.  
FAIRFIELD, ILLINOIS

**Sell AIRTEX Fuel Pumps, equipped with 50,000 Mile Guaranteed Diaphragms**



Looking at the job from every angle

...you'll see why  
it's wise to choose  
an **OSHKOSH!**



**F**OR keeping highways and runways open  
—for construction and maintenance—for  
long and short hauling—OSHKOSH is effi-  
cient, economical, flexible equipment that pays  
its way throughout the year. Complete range  
of sizes from 23,600 to 95,000 gross vehicle  
weight. Write for descriptive literature.

SERVICE STATIONS LOCATED AT CONVENIENT  
POINTS THROUGHOUT  
THE U. S.

**OSHKOSH MOTOR TRUCK, INC.**  
OSHKOSH, WISCONSIN  
CABLE ADDRESS: "OSHMOTOR" OSHKOSH

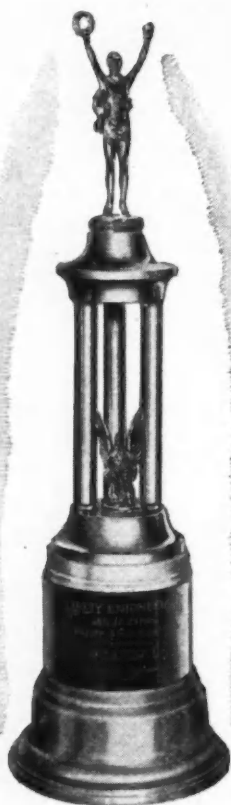
**OSHKOSH**



# REO FIRSTS

## Wins First Postwar Safety Award

**FIRST** to produce school bus with chassis and body engineered as a single balanced unit. Equals or exceeds highest safety standards adopted by all the states and endorsed by National Education Association. Provides safer pupil transportation!



### SAFETY TROPHY

Reo Safety School Bus was 1946 winner of Safety Engineering Magazine's annual award for outstanding safety in motor vehicle design—the first since 1941. The presentation of the trophy to Reo Motors, Inc. was made at the annual session of Institute of Traffic Engineers and Greater New York Safety Council.



### FIRSTS WITH REO

Over the years, Reo pioneered these important and lasting features in the truck field:

- DRY DISC CLUTCH
- ELECTRIC LIGHTS
- ELECTRIC STARTER
- "INSIDE" GEAR SHIFT
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- HYDRAULIC BRAKES

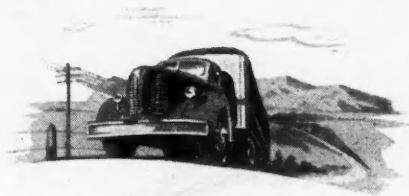
# Look to

The impressive record of Reo during 42 years was highlighted by the awards of distinction in 1946. The Reo engineering skill and craftsmanship which made possible these outstand-

**REO MOTORS, INC.**

REO GAVE AMERICA THE SPEED WAGON, THE FLYING CLOUD, "MORE-LOAD" TRUCK DESIGN

# FOR 1946



## Wins Both Firsts in National Truck Drivers' Rodeo

**FIRST** in the tractor-trailer event of the American Trucking Associations' Rodeo at Chicago, October 8, 1946. Champion driver, Charles Zimmerman, likes Reo's ease of handling.

**FIRST** in the straight truck event. Thus sweeping both ATA contests and winning nation's top honors. Champion Alex Adamski is happy he elected to drive a Reo in contest.



**CHARLES ZIMMERMAN**  
of Cushman Motor Delivery Company, Chicago, and 1st in tractor-trailer class, has a 13-year accident-free record of more than 1,000,000 miles of travel over the highways.



**ALEX ADAMSKI**

of George F. Alger Company, Detroit, and 1st in straight truck class, has driven more than 200,000 miles in Chicago's crowded streets without a single accident.



### ROADEO TROPHIES

Factors that helped the champion drivers win these coveted trophies were Reo's unfailing power which paid off in the pinches—and the famous Reo More-Load design which provides shorter turning radius, greater maneuverability and quicker response to the wheel.

# Reo in '47

ing achievements will provide new and added features of design, construction and performance in 1947. They, too, will set new, high standards in the field of commercial transportation.

LANSING 20, MICH.

STANDARDIZE ON

# REO

1904 • AMERICA'S TOUGHEST TRUCK • 1947

AND SAFETY SCHOOL BUS. WATCH FOR IMPORTANT, NEW BASIC CONTRIBUTIONS.



SERVING THROUGH SCIENCE

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U.S. ROYAL



U N I T E D S T A T E S

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## *Fleet Delivery* IS BACK!

Here's news that means more tire mileage for delivery truck operators everywhere.

The special "stop-and-start" tire—the U. S. Royal Fleet Delivery—is available again!

This famous tire is *especially built* for "stop-and-start" delivery service. From massive tread to buttressed sidewalls, its design and

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And today the U. S. Royal Fleet Delivery comes to you with tough tire rayon—a better, longer-lasting tire than ever before! Put this mile-saving specialist on your delivery jobs—see your U. S. Tire Distributor today!

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★ **RUGGED SHOULDER BUTTRESSES** protect sidewalls against curb scuffing and bruising.

★ **CENTER RUNNING RIB** makes rolling easier, adds to tread life.

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**U. S. ROYAL FLEET DELIVERY**



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JANUARY, 1947

Use postage-paid card inserted at page 57 for free information on advertised products

25

# HOW'S YOUR CONSERVATION RECORD?

**Have you been doing these three things?**

- Instead of replacing old batteries, have you been charging them regularly, as long as they will retain a charge?

Have you been saving your new Edison batteries for absolutely necessary replacement?

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RELY ON AN EDISON**

**1947 — 100th Anniversary of the Birth of Thomas A. Edison**

## EDISON BATTERIES

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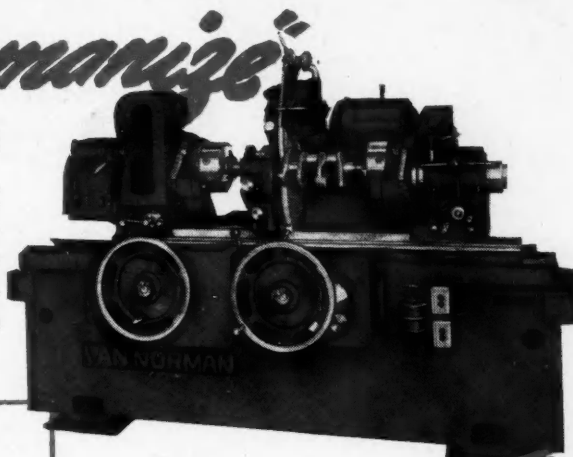


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*"It pays to Van Normanize"*

**WITH THIS COMPLETE, HEAVY-DUTY LINE**

VAN NORMAN gives you top machine-tool quality, to hold your operating costs *down*... plus speed and ease of operation to keep your profits *up*. Each machine is built around the proven fact that *the best equipment you can buy is the least expensive factor in your whole business*. See your jobber, or write Van Norman Co., Springfield 7, Mass.



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Capacity: 36"; 18" swing. Also 2 larger models, No. 666 and No. 111.

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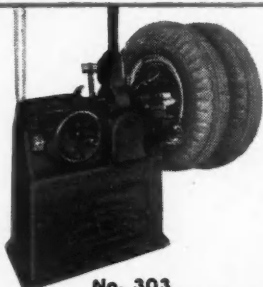
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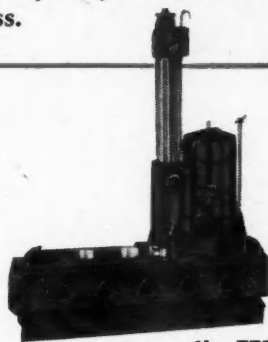
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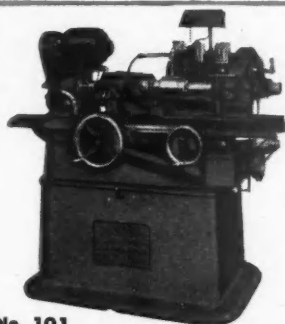
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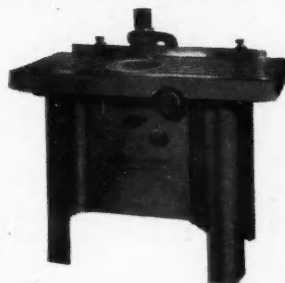
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for heavy-duty work, turns and grinds at same time. Independent Grinder. Also No. 333 Lathe for car and light-truck drums.



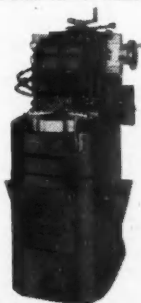
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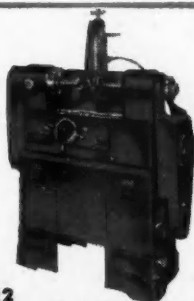
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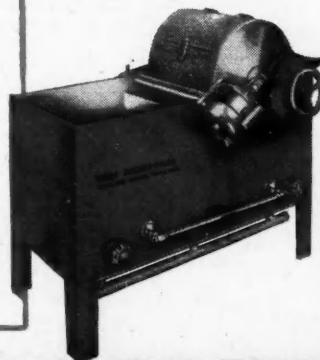
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for cylinder heads, block-tops, manifolds, other flat surfaces. No set-up tools needed.



**No. 444  
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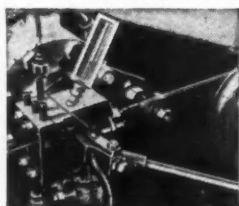


**The Best-Equipped Shop  
Gets the Business!**

that's why *"It Pays to Van Normanize"*



## Drawing a Bead on Revenue Miles!



Revenue miles—lifeblood of the trucking business—come naturally when a Kelly skilled worker "draws a bead" on a new tire.

And "building a bead" of extra strength and rigidity is just one of the many painstaking operations that Kelly tire builders perform their way. They are constantly reminded, *"if it isn't built stronger, safer and tougher, it isn't a Kelly!"*

Many fleet operators have kept rolling on Kellys through the years for just that reason. They know that Kelly has endeavored since its earliest days to build a real "trucker's tire"—a tire with tougher-than-steel Armorubber tread, made to resist bruising and excessive wear—to "deliver the goods" long after other tires are worn out.

Draw a bead on more revenue miles for your trucks. Test the new Kelly against others. See for yourself that it lives up to its reputation of delivering longer trouble-free mileage.

THE KELLY-SPRINGFIELD TIRE COMPANY  
Cumberland, Maryland

**KELLYS  
ARE TOUGH!**

**KELLY**  
*Springfield*  
**TIRES**





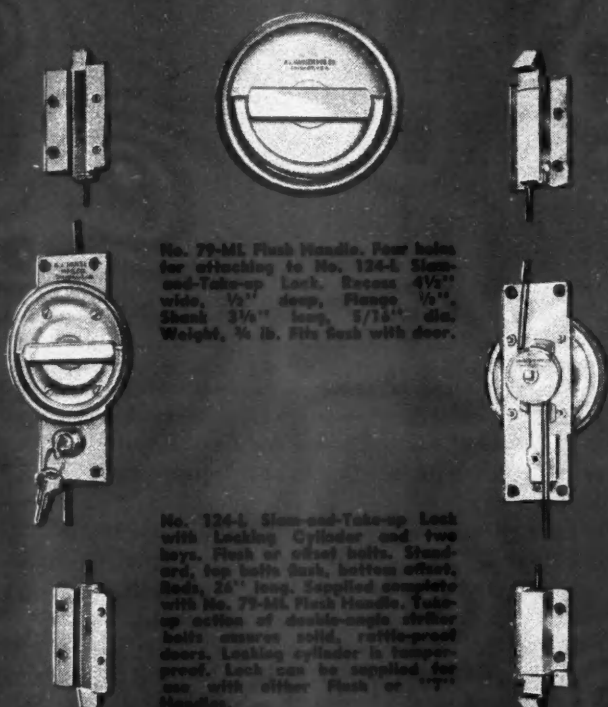
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Write for descriptive literature.



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AS MODERN AS THE MOST MODERN BODY

**A. L. HANSEN MFG. CO.**

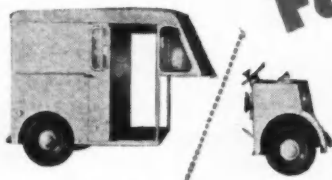
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# DelivR-all delivers the Goods



## More Deliveries. Faster, Easier



What kind of delivery truck do you want?

Do you want a truck with a short, short wheelbase?—one that handles easily in traffic?—one that parks in a very short space? *That's DELIVR-ALL!*

Do you want a truck with a wide, low, easy-step-in floor?—with the same low floor level extending straight through from front to back? *That's DELIVR-ALL!*

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Do you want a truck that operates from both standing and seated positions? . . . a truck with two flexible speed ranges?—one for frequent-stop deliveries, another for driving to and from routes? *That's DELIVR-ALL!*

Do you want a truck with a detachable and interchangeable front-wheel-drive power unit?—a unit that's easy to service and repair and makes possible continuous operation through preventive maintenance? *That's DELIVR-ALL!*

No matter how you look at it, if you want more deliveries in less time with less effort—*DELIVR-ALL delivers the goods!* Write for complete information.

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# COMMERCIAL CAR JOURNAL

with which is combined Operation & Maintenance

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## EDITORIAL CONTENTS

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CCJ Reader Digest ..... 34

### FEATURE ARTICLES

|  |    |
|--|----|
| Bonus Plans Cut Accidents .....                                | 35 |
| Overhaul Economy Through Steam Cleaning .....                  | 36 |
| Spot Checking Costs Cuts Paper Work .....                      | 38 |
| Tire Economy — Product of Good Program .....                   | 40 |
| CCJ Fleet Shop Manual Series — Ignition Trouble Shooting ..... | 43 |
| Simple System Keeps Track of Trucks .....                      | 50 |
| Maintenance Men Make Own Special Service Tools .....           | 52 |
| Trouble Shooting Spring Troubles .....                         | 60 |
| CCJ and 83 Fleetmen Attend IHC Service School .....            | 62 |
| 10-Point PM Cuts Costs 30% .....                               | 68 |
| Maintenance Control Cuts Road Failures .....                   | 74 |

### DEPARTMENTS

|                            |    |                            |    |
|----------------------------|----|----------------------------|----|
| The Overload .....         | 33 | CCJ Quiz .....             | 64 |
| Laugh It Off .....         | 47 | New Truck Registra-        |    |
| Shop & Salvage Hints ..... | 48 | tions .....                | 76 |
| Free Publications .....    | 56 | Washington Runaround ..... | 78 |
| New Products .....         | 57 | CCJ Newscast .....         | 96 |
| Detroit Dispatch .....     | 59 | Truck Specifications ..... | 93 |

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Upkeep and repairs to hoist and body:

**Grease, 3 pounds;**

**Oil, 2 quarts.**

For the past six months this St. Paul equipped truck worked steadily hauling sand and gravel from pit to washing plant. In 131 working days it hauled, on the average, 5 loads per hour, 9 hours per day, 5 cubic yards per load. The hoist, then, dumped 5895 loads for a total of 29,475 cubic yards.

A record? No, any busy dump truck of equal capacity could probably do as well....



But the owner-driver of this St. Paul equipped unit states that, since he bought the truck 14 months ago, his entire cost for upkeep and repairs to the hoist and body have amounted to... **three pounds of grease and two quarts of oil!**

**ST. PAUL HYDRAULIC HOIST DIVISION**  
**GAR WOOD INDUSTRIES, INC.**

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**THE BEST IN**  
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Yes, the International Triple-Diamond Emblem is the symbol of the best truck service—a best quickly available from thousands of International Dealers and from International Branches—the nation's largest company-owned truck-service organization.



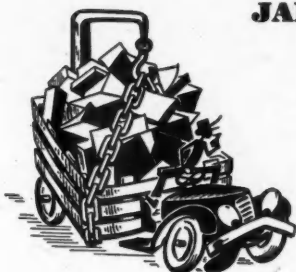
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 time and station



**INTERNATIONAL Trucks**





## EDITORIAL COMMENT

**The OVERLOAD**

by GEORGE T. HOOK, Editor

***The Boys in Back Offices Need Help in Selling the Men in Front Offices***

**V** Last month in this space we suggested that in order to compensate for higher operating costs, fleet operators must find ways of getting more production out of vehicles, out of the shop and out of personnel. We pointed out, just in passing (although it deserved real emphasis) that fleets must depend on modern shop equipment to help them do this job. We reserved our emphasis for the suggestion that the Men in Front Offices should now be seeking the ideas of the Boys in Back Offices—superintendents, shop foremen, head mechanics, etc.—as to ways and means of getting more production.

\* \* \*

We have no doubt that if asked for their ideas many of the Boys in Back Offices would recommend a variety of shop equipment, all for the purpose of (1) getting more production out of shop personnel with no increase in working hours and in many cases with less effort, and (2) doing work more efficiently so that road failures are reduced.

\* \* \*

But we wonder how many of them would be able to do a selling job if the Man in the Front Office said: "Your recommendations are very interesting. But what proof have you that the shop equipment will do what you expect of it?" It's a logical question that The Man has a right to ask. The idea is not to buy the equipment to spend money but to save money. All right then, where is the evidence that it will reduce maintenance costs?

\* \* \*

It is right here that so many such recommendations die an unnecessary death for lack of convincing facts. The Boys in the Back Offices being mechanically minded may feel that the existence of a particular piece of shop equipment is logic enough to favor its purchase. But that's not enough for The Man. He doesn't want opinion;

he wants proof. So The Boys turn for help to the representative of the equipment manufacturer. This is usually a jobber salesman who just as usually knows no more about the shop equipment in question than the manufacturer puts into a catalog sheet or piece of promotional literature. And what do most manufacturers put in such literature, Claims. Yes, claims—lots of them—every one sincere and very likely the gospel truth but just so much one-man's opinion, completely unsupported by factual proof. They don't sell The Man who is laying out the dough and who wants evidence that will spell out for him the soundness of the proposed investment.

\* \* \*

Of course it is surprising how much shop equipment has been sold to fleets on "claims" alone, and much will be sold on the same basis in the future. But it just makes selling harder for the manufacturer and his representatives

and for the Boys in Back Offices who have to sell the Men in Front Offices.

\* \* \*

Wouldn't it be a lot easier all 'round if the claims were supported by JOB STUDIES? Not job studies made under controlled conditions in a manufacturer's laboratory, but studies made under actual conditions in a fleet-shop. In fact, it wouldn't hurt to have both types of studies, just to prove that nothing is being concealed up the sleeve. Such studies ought not to be difficult to make. Off hand we can think of a score of fleet shops that would be glad to work with shop equipment manufacturers in the making of job studies. And nothing, we believe, would be more convincing to prospective fleet buyers than facts which show the time it takes and what it costs to do a job by prevailing unenlightened methods as compared with methods utilizing modern shop equipment.

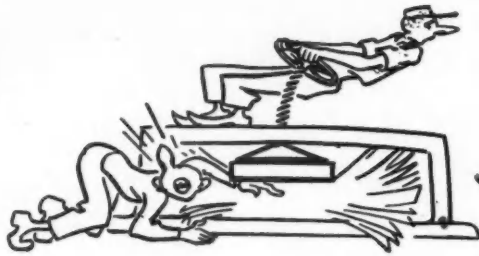
\* \* \*

Some job studies would, we realize, be more difficult to make than others but all of them would be worthwhile investments on the part of manufacturers in helping fleet operators make investments without delay and with confidence that they would contribute to the reduction of high operating cost headaches.

Out on the West Coast operators of diesel trucks are having headaches of another sort. It's not the fault of the diesels; it's the fault of some operators who are careless about maintenance. As a result, the noise and smoke caused by the improperly maintained diesels have aroused the public and there is a clamor for punitive legislation. In California a legislative committee is studying the problem and it is to be hoped that regulations and ordinances will not be passed to the detriment of diesel operations.



"OK, I'll order a case if you insist! But I warn you, this Seller's Market won't continue forever!"



## READER DIGEST

To give busy readers basic facts, CCJ editors have condensed this month's leading articles on this page

### Overhaul Economy



by JAMES M. O'NEIL, C & F Trucking & Contracting Co.

**WE HAVE** broken down our maintenance problem into two principal parts: First, to make the daily inspection and the 1000-mile check extend the period between major overhauls, and, second, to shorten overhaul time. The first part has helped us to catch troubles while they are small. The second part has been effectively accomplished by this simple procedure: Before all general overhauls each truck is given a complete steam cleaning.

For the average truck overhaul, we allow one man 16 hours for the cleaning. An average, on the last 20 truck steam cleanings, of 5½ lb. of soap powder and 10 gal. of deisel fuel oil were used per truck. The cost per truck for these items was \$4.05. Labor for cleaning figures at \$9.60 per eight-hour shift, plus tax, runs around \$21 per truck. Total: \$25.05 per truck.

Records show that, as a result, we have been able to cut overhaul time by three days. The big advantage is that our trucks are back in service that much sooner. (See Page 36.)

### Spot Checking Costs Cuts Paper Work



by T. A. DRESHER, Transportation Manager, Borden's Products Farm

**KEEPING** cost records on a good-sized, centrally-located fleet is one thing. Keeping the same records on a fleet of approximately 2000 widely diversified vehicles operating from 28 locations is another.

Before the war we had very accurate and complete records on every vehicle. But the war years changed our thinking. It cost a lot of money to get these figures. And, more importantly, it took a lot of manpower. We found that our shop foremen were bookkeepers first, maintenance men second.

Accordingly, early in 1942, we decided to scrap the whole system, as far as individual vehicle cost accounting was concerned, and pay all bills from our central office. This gave us the overall cost for each branch garage and, by dividing the figure by the number of vehicles in that garage, we knew the *average* operating cost per vehicle. Two obvious weaknesses caused us to work out a compromise solution in 1946 which, after a year's operation proved highly successful. It consists, basically, of spot checking, by means of cost figures, a substantial cross-section of the fleet.

There are three basic types of vehicles in the fleet—retailers, wholesalers, and heavy-duty tractors for bulk hauls. As there are but 90 tractors operating from a single headquarters garage and three secondary garages, and 450 wholesalers operating from four garages, we decided to include all these vehicles. Then, to cover our 1300 retail trucks and 150 passenger cars, we selected two

more garages which were operating sufficient numbers of each type and make to give a good cross-section picture.

Thus, we end up with a total of only seven branch garages keeping complete cost records, compared with 28 under the pre-war plan. (See Page 38.)

### Maintenance Men Make Own Tools



by JOHN KRILL

**THE** Isaly Dairy Co., Youngstown, Ohio, is a fleet operator having 123 trucks ranging from retail deliveries to heavy wholesale units. With a fleet of this size special service tools must be employed to expedite repairs. And in fleet supervisor Karl Koch has a man with no little ingenuity in creating needed tools. For example, a jig was made to rivet wheel hubs to brake drums in a hydraulic press.

Another brain child is the running-in stand that handles all types and sizes of engines. As shown in Figs. 3 and 4, it is rugged, yet light in weight, simply constructed, and completely equipped.

Another device that sees constant use is the 150-gal. tank for washing engine blocks and large heavy parts. A grease- and oil-cutting compound is used as the solvent, which is heated efficiently by a side-arm gas heater connected to coils in the bottom.

An effective engine exhaust system is shown in Fig. 6. (See Page 52.)

### Fleet Study No. 3—Tire Economy



by A. L. HAUCK, Tire Engineer, Silver Fleet Motor Express

**NOTHING** short of full information about the tires in a fleet will do. To get full information, it takes many forms and the cooperation of all the personnel throughout the system.

Our records are so designed that we can locate any phase of tire cost. We can get costs for a year, a month, a week; or for a given period for a particular group of like units; or by brand names; or cost of operation on one certain route as compared with another.

We break down our tire servicing operation into four classifications:

1. Inflation. Our department spot-checks inflation pressures throughout the system. We spot-check at odd times and places.

2. Tire mating. In 1945, mismating of duals totalled 29.8 per cent. Today, our records show we have exceeded ourselves because only 4.1 per cent are mismated and our goal was set at 7 per cent.

3. Mechanical irregularities. Here we list such things as wheel bearing troubles, broken springs, imperfect alignment, etc.

4. Tire service items. Under this category we list such small items as loose lugs, bent rims, etc. These things are easily for-

(TURN TO PAGE 234, PLEASE)

"Our bonuses have been one of the largest contributing factors in our overall good driving practices," says this operator.



# Bonus Plans

## Cut Accidents

by M. E. BEALEY

Vice President, Silver Eagle Co., Portland, Ore.

I BELIEVE that our industry, from within its own ranks, should seriously consider the adoption and enforcement of a nation-wide highway safety program through its state associations, manned with competent, trained personnel. Such a program should develop an outstanding, safe highway transportation system essential to our economic welfare.

At present our company is cooperating with the Oregon Motor Transport Assn. on a program which, we hope, will be given consideration by other associations.

In order to facilitate such a program, I will attempt to list some of the points that were inaugurated by our own company in 1943, and which I feel are highly responsible for our improved safety record.

At the top of the list we place the establishment of an incentive program, which includes a No-Accident Mileage Bonus and a Loyalty Bonus.

### No-Accident Mileage Bonus

OUR No-Accident Mileage Bonus applies, of course, to our drivers. The bonus plan and the conditions of eligibility and payment are as follows:

1. All drivers are eligible to receive bonus payment who have had clear, no accident record for any quarterly period.

2. Bonus to be paid quarterly.

3. Any driver starting to drive after a quarterly period has begun will not receive bonus until the following 3-month quarter has ended, at which time he will receive 5-month payment.

4. No bonus to be paid a driver

who has had an accident in any quarterly period.

5. Bonus to increase one mill per mile each no-accident year, until maximum of 5 mills is reached.

6. Mileage to be based on mileage chart. If mileage is not shown, take map mileage plus 5 miles to any point in the state or out of state.

7. The increase per year of one mill to be left to discretion of company officials if driver has had any accidents in past year. Example: If driver has had an accident due to his own carelessness and is not very cooperative, the management could discipline by having driver stay on present rate per mile.

8. Increase per year of one mill to start Jan. 1 of each year.

### Advantage of Rate Increases

AS A MAN'S seniority increases, so do the bonus payments. As the checks grow in size for each individual payment, the employee becomes more conscious of this bonus.

We have had some cases of older drivers being involved in minor accidents where they were entirely free

of all blame, but they have requested from other parties involved a statement and signature on our trip sheets, indicating that they accepted all responsibility. This in itself is a large step forward in our safety program in that, if we are at fault, we receive better accident reports and more information concerning the accident, because we have the other parties' story above their signatures on our trip sheets.

### Loyalty Bonus

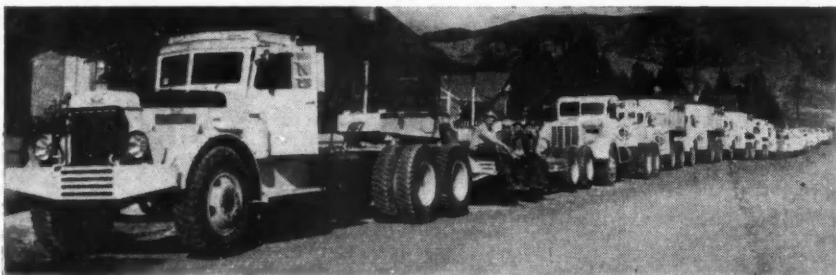
THE other bonus mentioned is our Loyalty Bonus which operates as follows:

1. Every employee is eligible.
2. No one is to receive bonus payment until completing six months with the company.
3. Bonus to be paid semi-annually.
4. Payment Schedule:
 

|               |            |
|---------------|------------|
| 1st 6 months, | 1 per cent |
| 2nd " "       | 2 " "      |
| 3rd " "       | 3 " "      |
| 4th " "       | 4 " "      |
| 5th " "       | 5 " "      |
| Thereafter    | 5 " "      |

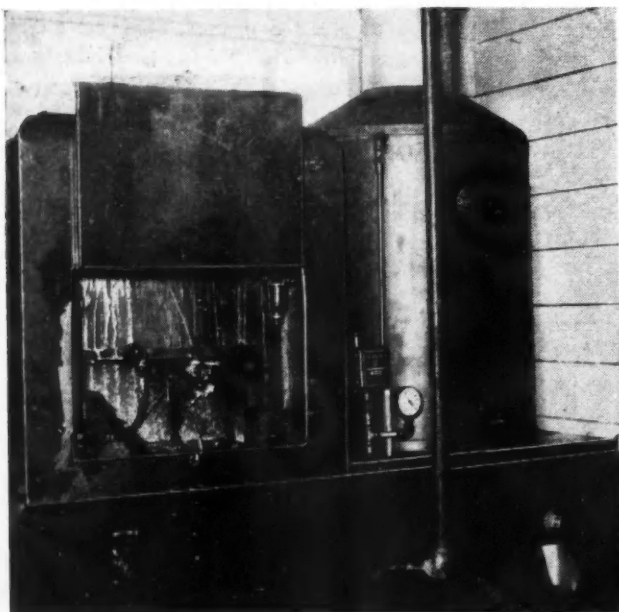
(TURN TO PAGE 80, PLEASE)





# Overhaul Economy

**Steam Cleaning Cuts 3 Days,  
\$54.15 Net per Truck**



*Top. Line-up of some of the carefully maintained trucks of C & F. Above. Steam cleaner consists of a diesel fuel oil heater, an electrically-operated pump, and solution tank*

OUR FLEET is engaged mainly in hauling ore for the Anaconda Copper Co., highway construction, grading and open pit mining—a rugged operation with a tough maintenance problem. We have 45 trucks comprising four 8-yd., 9-ton, straight dump trucks; 16 7-yd., 5-ton, straight dump trucks; 14 8-yd., 2½-ton, semi-trailer dumps; two transports; one 1½-ton utility; six standard pickups and two specially-equipped pickups.

Our big problem is to keep this fleet in active service with the lowest possible number of idle units. We have broken down our maintenance problem into two principal parts: First, to make the daily inspection and the 1000-mile maintenance check extend the period between major overhauls and, second, to shorten overhaul time.

The first part has helped us to catch troubles while they are small,



*Steam is sprayed from hose. It takes an average of 16 hours to clean a big dump truck*



inexpensive and easily corrected. The second part has been effectively accomplished by this simple procedure: Before all general overhauls each truck is given a complete steam cleaning—and we do mean complete.

For the average truck overhaul, we allow one man 16 hr. for the cleaning. An average, on the last 20 truck steam cleanings, of 5½ lb. of soap powder and 10 gal. of diesel fuel oil were used per truck. The cost per truck for soap and fuel oil, based on the last 20 trucks, ran \$4.05. Labor for cleaning figures at \$9.60 per 8-hr. shift, plus tax, runs around \$21 per truck. Total for total cleaning cost, averaged for last 20 trucks so cleaned, ran \$25.05 per truck.

#### Cut Overhaul Time by 3 Days

COMPARATIVE unit general overhaul costs and time records show that since we have been doing com-

**by JAMES M. O'NEIL**  
Superintendent of Maintenance  
C & F Trucking & Contracting Co.,  
Butte, Mont.

plete steam cleaning before overhaul work, we have been able to cut overhaul time by three days. Of course, the big advantage in the time savings is the fact that our trucks are back in service just that much sooner.

We have found that there are also a number of other advantages. The 24-hr speedup in the general overhaul job shows a maintenance and repair labor savings of \$79.20 (based on average for last 20 trucks overhauled, broken down into three two-men shifts of 8 hr., \$12 per 8-hr. shift, plus tax).

#### Save \$54.15 per Truck

FROM this \$79.20 savings must be taken the \$25.05 average cost of

the two 8-hr. steam cleaning shifts, which leaves a net labor saving per truck of \$54.15.

Besides the time savings, there is an efficiency advantage resulting from the steam-cleaned job. Mechanics do better work on a 100 per cent clean truck. In making the inspections, many errors such as fractures, cracks, etc., are brought to light only because of the pre-inspection complete cleaning.

Moreover, the time required to complete the paint job is greatly reduced because every inch of the truck and trailer going to the paint shop is 100 per cent clean.

Then there is another advantage which is hard to catalog. Men working on a clean job just naturally do a better class of work. The temptation to slight any part of the job is reduced to the Nth degree. We be-

(TURN TO PAGE 103, PLEASE)

**For an added expenditure of \$25.05 per truck,**

**fleet's cost records show \$79.20 gross savings.**

**In addition, maintenance quality is greatly improved.**



James M. O'Neil

Here a crack in the frame was brought to light with steam cleaning prior to overhaul



Pre-steam cleaning before overhauls speeds paint job. Here foreman completes paint job





***This is one of Borden's many retail delivery types***

# Spot Checking Operating Costs

**KEEPING COST RECORDS** on even a good-sized, centrally-located fleet is one thing. Keeping the same records on a fleet of approximately 2000 widely diversified vehicles operating from 28 locations is another. The latter was and is our specific problem.

Before the war we had very accurate and complete records on every vehicle. From our master records we could tell that a cracked spark plug on truck No. 546B cost us 48 cents on Dec. 6, and that, by year's end, this particular vehicle had cost \$19.32 more than a similar model traveling the same mileage and operating from a different garage five miles away.

But the war years changed our thinking. It cost a lot of money to get these figures. And, more importantly, it took a lot of manpower. We found that our shop foremen were bookkeepers first, maintenance men second. It was not a healthy situation at a time when the continuous and efficient operation of our fleet was just about the most important factor in our business.

Accordingly early in 1942, we decided to scrap the whole system, as far as individual vehicle cost accounting was concerned. We retained, of course, the overall figures for each of our 28 fleet operating garages. These figures were obtained through the simple expediency of paying all the

bills from our central office. Thus, we knew each month the exact overall cost for each branch garage and, by dividing the figure by the number of vehicles in that garage, we knew the *average* operating cost per vehicle.

We also retained our daily gas, oil and mileage report on each vehicle, as well as a monthly analysis

of lubricating oil samples from each vehicle. (The latter was on a contract basis with an independent laboratory.) Careful scrutiny of these two reports by our headquarters staff could, with surprising accuracy, put the finger on any vehicle that was even a little out of line. Furthermore, by utilizing the total mileage revealed by these daily reports, we could com-

**Unique system is based upon sampling cross section of fleet's vehicles.**

**Records, requiring only four forms, are kept in seven instead of 28 garages**

by **T. A. DRESHER**

### Transportation Manager, Borden's Farm Products

[illegible]





*Other major categories are bulk transportation (left) and wholesale (right). All units are located in New York City area*

## Cuts the Paper Work of Scattered Fleet

bine this figure with our overall unit operating cost and obtain the *average* cost per vehicle per mile or per vehicle per month.

It will be noted that we were dealing in average figures; figures that served admirably during the period when new vehicles were unobtainable and old vehicles must serve regardless of their cost. The two obvious

weaknesses were, first, the fact that we could not conclusively determine when a given vehicle's operating cost had out-reached the economical trade-in point, and, secondly, the fact that we had no accurate means of comparing the cost figures of different make vehicles of comparable capacities.

(TURN TO PAGE 106, PLEASE)

FORM 1-68  
FEB. 1968

**AUTO SERVICE & REPAIR SHOP REPORT**

ICDOT DIVISION \_\_\_\_\_

DATE \_\_\_\_\_ TIME \_\_\_\_\_

VEHICLE MAKE \_\_\_\_\_ YEAR \_\_\_\_\_

VEHICLE MODEL \_\_\_\_\_

VEHICLE NUMBER \_\_\_\_\_

RELEASE OPERATOR \_\_\_\_\_

CALL NO. \_\_\_\_\_

QTY. OIL \_\_\_\_\_

LUBES USED \_\_\_\_\_

COST OF MATERIALS \_\_\_\_\_

1

**Fleet**

3

Rule off after each make/model and show subtotals. Press total miles, gas and oil against AF-54.

Form  
8-843  
305-60

# AUTO SERVICE & REPAIR RECORD

19

GARAGE

MONTH

INSTRUCTIONS

Fill out this form for each service or repair. It is to be filled out by the customer or the person who is responsible for the work. It is to be filled out by the person who is responsible for the work. It is to be filled out by the person who is responsible for the work.

| (A) SERVICE |      |   |   |             |   |         |   |        |   |        |    |        |    | (B) ADJUSTMENTS & (C) REPAIRS |    |        |  | TRAILER NO. |  | MOTOR VEHICLE |  |
|-------------|------|---|---|-------------|---|---------|---|--------|---|--------|----|--------|----|-------------------------------|----|--------|--|-------------|--|---------------|--|
| DATE        | TIRE |   |   | LUBRICATION |   | WASHING |   | WAXING |   | WAXING |    | WAXING |    | WAXING                        |    | WAXING |  |             |  |               |  |
|             | 1    | 2 | 3 | 4           | 5 | 6       | 7 | 8      | 9 | 10     | 11 | 12     | 13 | 14                            | 15 | 16     |  |             |  |               |  |
| 1           |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 2           |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 3           |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 4           |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 5           |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 6           |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 7           |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 8           |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 9           |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 10          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 11          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 12          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 13          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 14          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 15          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 16          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 17          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 18          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 19          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 20          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 21          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 22          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 23          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 24          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 25          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 26          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 27          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 28          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 29          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 30          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |
| 31          |      |   |   |             |   |         |   |        |   |        |    |        |    |                               |    |        |  |             |  |               |  |

NO DAYS RIDE

GAS/GAL USED

QTS OIL USED

SPEEDOMETER - END OF MONTH

= 100 =

TOTAL MILEAGE OPERATED

TOTAL OF ABOVE

TOTAL OF MONTH

PERCENT

Includes (B) and (C) Fuel Oil

FORM H-1000  
January 1946

MONTHLY FINANCIAL REPORT  
FOR INDICATED LOCATIONS

Sheet No. \_\_\_\_\_  
No. Sheets \_\_\_\_\_

4

Prepared by \_\_\_\_\_  
Account, Dept \_\_\_\_\_  
Cost Division \_\_\_\_\_

SERVICE & REPAIR COST \_\_\_\_\_  
TOTAL PER VEHICLE PER DAY  
PER VEHICLE PER MILE

MONTH \_\_\_\_\_

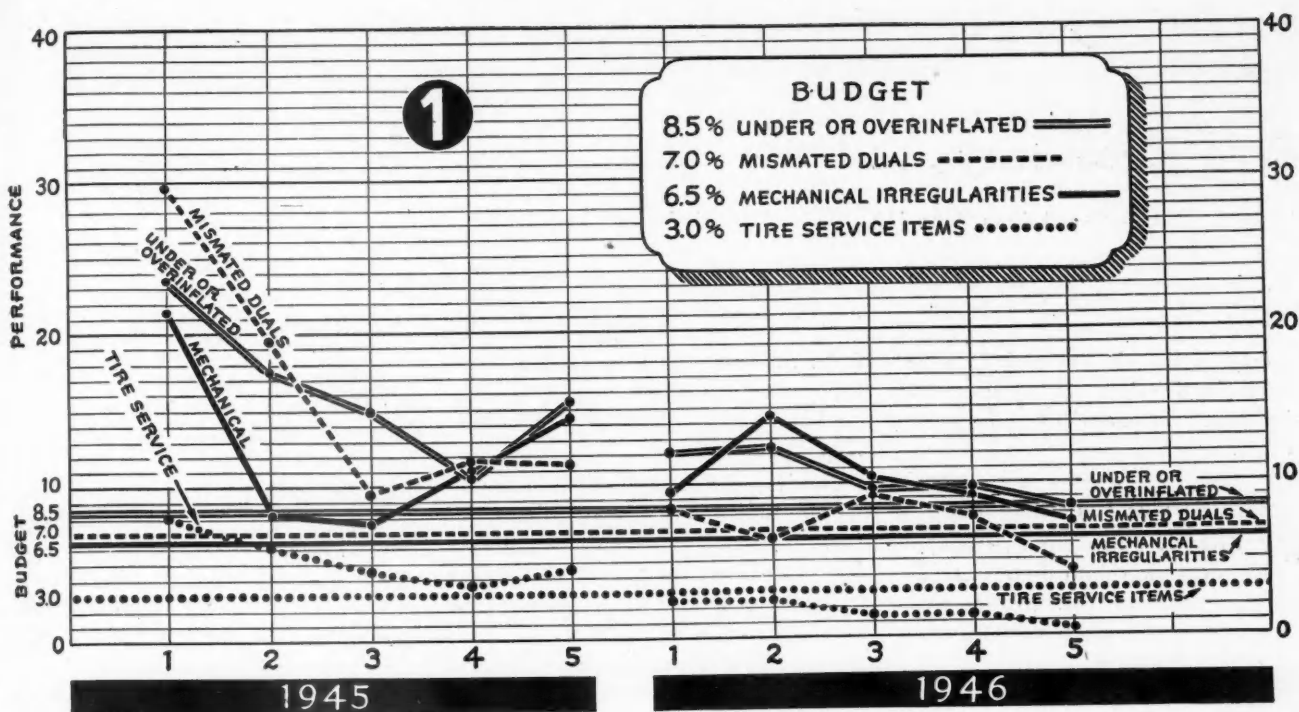
CONTROLLABLE EXPENSE

| NAME                                | SIZE  | NO. | CONTROLLABLE EXPENSE |                      |          |       | NON-<br>CONTROL<br>EXPENSE | GRAND<br>TOTAL |
|-------------------------------------|-------|-----|----------------------|----------------------|----------|-------|----------------------------|----------------|
|                                     |       |     | WAGES                | MATER. &<br>SUPPLIES | EXPENSES | TOTAL |                            |                |
| RIVERSIDE WHOLESALE - OVER 1 TON    |       |     |                      |                      |          |       |                            |                |
| "A"                                 | 2 1/2 | 32  | .073                 |                      |          | .140  | .135                       | .275           |
| "B"                                 | 1 1/2 | 1   | .066                 | .007                 | .002     | .075  | .062                       | .134           |
| "C"                                 | 2 1/2 | 27  | .101                 | .069                 | .009     | .209  | .065                       | .274           |
| "D"                                 | 2 1/2 | 11  | .105                 | .072                 | .004     | .181  | .097                       | .278           |
| "E"                                 | 2 1/2 | 30  | .071                 | .052                 | .014     | .137  | .093                       | .230           |
| TOTAL                               |       | 101 | .083                 | .068                 | .010     | .161  | .099                       | .260           |
| RIVERSIDE WHOLESALE 1 TON AND UNDER |       |     |                      |                      |          |       |                            |                |
| "A"                                 | Coupe | 1   | .033                 | .040                 | .001     | .124  | .012                       | .136           |
| "B"                                 | Coupe | 6   | .094                 | .046                 | .014     | .134  | .016                       | .170           |
| "C"                                 | 1     | 2   | .027                 | .026                 | -        | .053  | .014                       | .067           |
| "D"                                 | 1     | 1   | .051                 | .048                 | .001     | .100  | .041                       | .141           |
| "E"                                 | Coupe | 1   | .056                 | .013                 | .001     | .069  | .012                       | .081           |
| TOTAL                               |       | 11  | .065                 | .038                 | .007     | .110  | .016                       | .126           |

|                     |       |    |      |      |      |      |      |      |
|---------------------|-------|----|------|------|------|------|------|------|
| HOLLIS - OVER 1 TON |       |    |      |      |      |      |      |      |
| "A"                 | 2 1/2 | 2  | .025 | .021 | .002 | .049 | .039 | .108 |
| "B"                 | 2 1/4 | 25 | .040 | .032 | .002 | .078 | .033 | .106 |
| "C"                 | 1 1/2 | 21 | .046 | .055 | .112 | .193 | .036 | .229 |
| "D"                 | 2 1/4 | 14 | .056 | .050 | .003 | .119 | .069 | .188 |
| "E"                 | 2 1/2 | 1  | .062 | .023 | .108 | .213 | .271 | .484 |
| "F"                 | 1     | 27 | .074 | .039 | .003 | .116 | .040 | .156 |
| "G"                 | 1 1/2 | 2  | .046 | .067 | .003 | .106 | .037 | .145 |
| TOTAL               |       | 92 | .062 | .039 | .027 | .118 | .043 | .161 |

**Fig. 1. Borden's Auto Service & Repair Ticket follows familiar job ticket pattern, is first of company's four key forms**  
**Fig. 2. Auto Service & Repair Record provides individual daily record for each truck included in the Spot Check plan**  
**Fig. 3. Auto Service & Repair Shop Record shows monthly totals of each key shop. Vehicles are listed by make and type**  
**Fig. 4. Monthly Vehicle Report is headquarters record for each group of vehicles. Note up to 32 vehicles on one line**





**Graph shows how fleet has improved in our four tire service classifications and pulled service down to established budget**

**by A. L. Hauck**

**Tire Engineer**  
**The Silver Fleet Motor Express, Inc.**

records that show how many lug nuts came loose and how many tires were damaged by bent rims.

With such data available, you can take steps to correct a condition that is causing needless expense. If there are too many loose lugs, more inspections can be added until it is reduced to nothing.

Thus, it is readily apparent how important it is to track down the cause of any failure and to keep a record of these failures. Failure may be defined as any departure from a normal span of life, and any good program then must define a minimum life that will be acceptable for each tire. Then it should be considered that this minimum figure is what all should come up to, and what most of the tires in the fleet should exceed.

In purchasing new tires, a certain type of construction is bought and each manufacturer is required to give us a minimum mileage guarantee. No one ever makes any money making a guarantee good. We merely want to establish a minimum life for that

(TURN TO NEXT PAGE, PLEASE)

[illegible]

**Daily Tire Summary, 11 x 8½ in., is a simple control form for tires taken out of inventory. It lists brand names, tire condition, brand number, wheel location, speedometer reading and repair costs**

## Close checks of all factors that affect

**tire life prevent premature failures**

## and good shop records help fleet tire men

## find reasons for failures and cut costs



## Tire Economy . . .

(Continued from Page 41)

amount of tire dollars and be sure that, if the tire does not live up to its minimum, someone will help bear the burden.

## Tire Service Classifications

**WE BREAK** down our tire servicing operation into four classifications: Inflation, mating, service items, and mechanical conditions that affect its life.

The inflation classification includes systematic daily pressure checking. Drivers, tire men and shop men—all check inflation pressures. Our department spot-checks inflation pressures throughout the system. We spot-check at odd times and at odd places. Tires were spot-checked at the Louisville terminal at 4 o'clock one morning. In Chicago, one noon, we picked up a spot-checked group for our records. No one concerned with a unit wants to be spot-checked and have his inflation pressures found wanting. We seldom have a driver miss checking his air at an authorized stop.

Our records show that last year 23.5 per cent of our tires were operated with air pressures more than

5 lb. too low. At this writing only 8.7 per cent are under-inflated. Our goal is 8.5 per cent and we are within .2 per cent of it.

New butyl tubes hold air better and we are starting to use double-check valve caps which prevent loss of air from valve leaks. These things should bring us to or below our goal.

Next division of tire service is tire mating. In 1945, mismating of duals totalled 29.8 per cent. Today, our records show we have exceeded ourselves because only 4.1 per cent are mismated and our goal was set at 7 per cent.

Next division in our four tire service classifications is mechanical irregularities. Here we list such things as wheel bearing troubles, broken springs, imperfect alignment in trailer wheels, power unit duals and power unit front ends.

Any of the many mechanical mishaps that can cause direct tire wear is listed in the mechanical irregularity classification.

The remaining classification is tire service items. Under this category we list such small items as loose lugs, bent rims, etc. These things are easily forgotten, easily overlooked and can cost the company a lot of lost rubber. The only way you can tell what is going on in this regard is to keep a record. In 1945, there was a total of 8.5 per cent of our tires with chargeable service items. We've almost eliminated trouble in this classification. The record shows we've dropped this item to 0.6 per cent and the goal is 3 per cent.

(TURN TO PAGE 114, PLEASE)

**Right. Individual Tire Cost Record, 6 x 4 in., lists pertinent information on each tire**

**Lower left. Yellow tag, 3 x 5¾ in., is attached to pre-matched sets to show where to install**

**Below. Overload and/or Distribution Report, 8½ x 6 in., for noting results of periodic weight and load checks**

|                         |   |   |   |   |   |   |   |   |    |    |    |    |    |                                |    |    |    |    |    |    |    |    |    |    |    |    |    |
|-------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|--------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1                       | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15                             | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| <b>TIRE COST RECORD</b> |   |   |   |   |   |   |   |   |    |    |    |    |    |                                |    |    |    |    |    |    |    |    |    |    |    |    |    |
| MAKE _____              |   |   |   |   |   |   |   |   |    |    |    |    |    | SERIAL NO. _____               |    |    |    |    |    |    |    |    |    |    |    |    |    |
| SIZE _____              |   |   |   |   |   |   |   |   |    |    |    |    |    | BRAND NO. _____                |    |    |    |    |    |    |    |    |    |    |    |    |    |
| TREAD CRACK _____       |   |   |   |   |   |   |   |   |    |    |    |    |    | LOAD CAPACITY _____            |    |    |    |    |    |    |    |    |    |    |    |    |    |
| CUT _____               |   |   |   |   |   |   |   |   |    |    |    |    |    | GUARANTEED COST PER MILE _____ |    |    |    |    |    |    |    |    |    |    |    |    |    |
| COST PER 1000 _____     |   |   |   |   |   |   |   |   |    |    |    |    |    | REMOVAL _____                  |    |    |    |    |    |    |    |    |    |    |    |    |    |
| COST PER 1000 _____     |   |   |   |   |   |   |   |   |    |    |    |    |    | REASON OR CONDITION _____      |    |    |    |    |    |    |    |    |    |    |    |    |    |

Form No. 294

**TIRE REMOVAL**

*Nashville*

Terminal \_\_\_\_\_

Vehicle No. RR 1

Location \_\_\_\_\_

Brand No. \_\_\_\_\_

Size 7-8-46

Date Off \_\_\_\_\_

Speedometer Reading \_\_\_\_\_

Cause \_\_\_\_\_

Disposition \_\_\_\_\_

REPLACED BY \_\_\_\_\_

Make \_\_\_\_\_

Serial No. \_\_\_\_\_

Brand No. \_\_\_\_\_

Signed \_\_\_\_\_

6

THE SILVER FLEET MOTOR EXPRESS, INC  
 OVERLOAD AND/OR DISTRIBUTION REPORT

TRACTOR NO. 537      TIRE SIZE 11:00-20  
 TRAILER NO. 3031      TIRE SIZE 10:00-20

DATE July 8, 1946

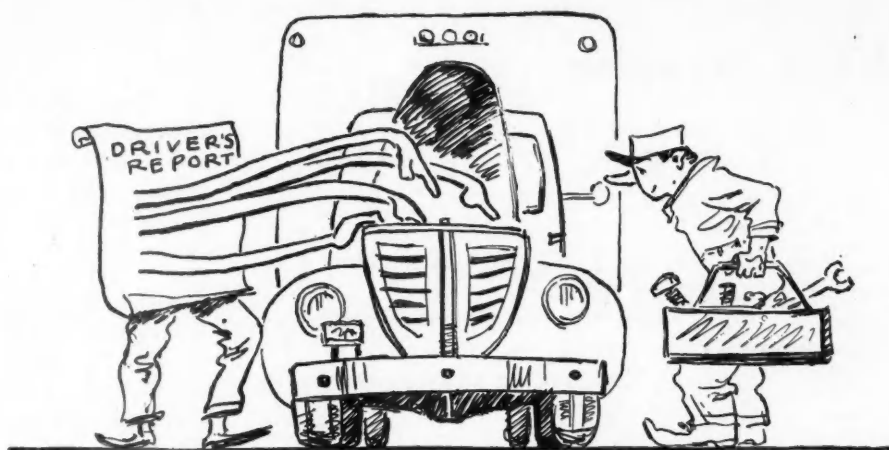
|                    | CARRYING CAPACITY | ACTUAL WEIGHT |               |
|--------------------|-------------------|---------------|---------------|
| TRACTOR RIGHT REAR | <u>4000 lbs.</u>  | <u>10,000</u> | 11.9 overload |
| TRACTOR LEFT REAR  | <u>4000 lbs.</u>  | <u>9000</u>   |               |
| TRAILER RIGHT REAR | <u>8000 lbs.</u>  | <u>9500</u>   | 20% overload  |
| TRAILER LEFT REAR  | <u>8000 lbs.</u>  | <u>8200</u>   |               |

MANIFEST NO. 12345678 FROM Chicago TO Louisville PAY LOAD 25,681  
 MAXIMUM LOAD LIMIT 24,000

BY \_\_\_\_\_  
 TERMINAL \_\_\_\_\_

*Bad load distribution*  
*Overload 1,685 pounds.*

Make four copies (1) Operating Department, (2) Terminal Superintendent, (3) Tire Department, (4) Your Files.



## Drivers' Reports

### Guide Trouble Shooting of the Ignition System

Complaints by the men who drive trucks can provide the key to impending ignition system breakdowns; typical gripes analyzed

DRIVERS' REPORTS, properly filled out, are ideal sources of trouble-shooting information. These forms are designed for the convenience of the mechanic in checking and servicing the vehicle—yet how many shops make the most efficient use of them? When that truck rolls in for service, the driver's oral or written complaints may well be the key to a systematic ignition system checkup. His tips on trouble spots in his vehicle also may provide valuable leads to impending breakdowns. Remember, the driver knows a lot about that truck. He drives it; he lives with it; and, in many cases he knows what is wrong with it when it comes limping into the shop.

#### Tips From Light Complaints

THE driver's report, oral or written, may be based upon the condition of the lights when the starter is tried. He may report one of four conditions in this respect:

1. "Lights burn brightly, but starter won't turn." The mechanic knows now, that there is an open circuit in the starter switch, a defective starter, or a bad connection. The mechanic will make a connection across the starter switch terminals with a pair of pliers to see if the switch is defective. If the cables and terminals are ok, he will assume that the starter motor is defective.

2. "Lights dim, starter will not work." This would indicate at once to the mechanic that the battery is low, has a dead cell or a bad cable connection. He will also check to see that the terminals are not corroded, as he knows that corrosion will cut down current flow. If the battery is in a low state of charge, he will immediately determine why. It may be due to:

1. Excessive use of starter
2. Short runs and large current draw
3. Defective regulator or low setting of the unit
4. Cracked battery box
5. Defective or loose wiring or terminals

Of course there are other conditions which may cause the lights to dim when the starter button is depressed. The engine may be frozen, for instance, or it may be due to a defective starter drive or a dirty starting motor commutator.

3. "Lights show no change but starter doesn't make contact." This would indicate that the starter drive spring is broken, that the drive is in need of lubrication or that the fly-wheel teeth are damaged. If the drive is of the overrunning clutch type it may be due to misalignment of the shifter fork or failure of the clutch drive.

(TURN TO NEXT PAGE, PLEASE)

by **M. K. SIMKINS**  
Technical Editor,  
Commercial Car Journal

ENGINE Ignition System Trouble Shooting

## . . . Ignition System

(Continued from Page 43)

4. "Lights dim and starter locks." Binding of the starter gear in the flywheel teeth may be caused by stripped and broken teeth in the flywheel, bent or misaligned starter drive or loose starting motor mounting.

### Ammeter Reports

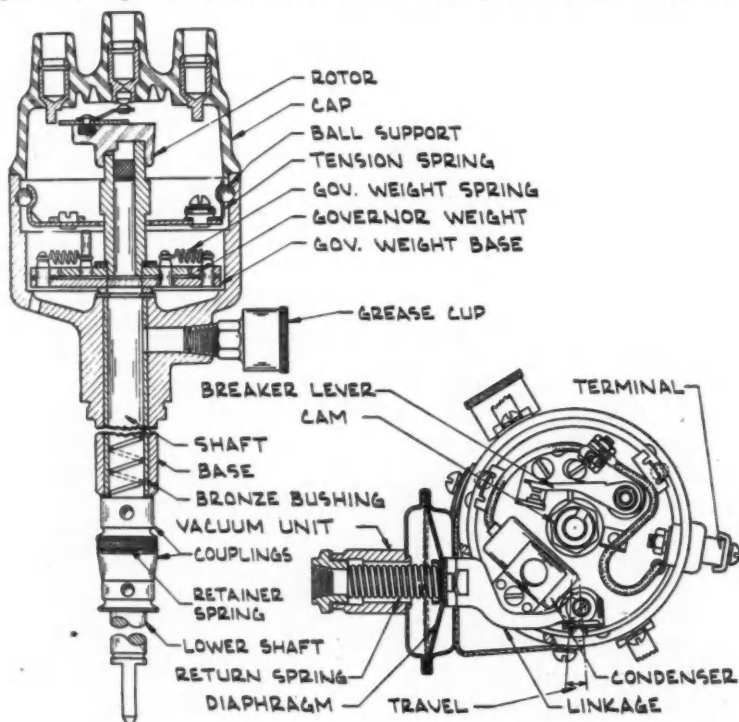
THE driver may base his report on the reaction of the ammeter hand when the engine is turned over. If he reports, "No movement of the hand while the engine is turning," it is at once apparent that there is an open circuit in the primary wiring, so the mechanic will immediately check for:

1. Broken wires in primary circuit
2. Proper opening and closing of distributor points.
3. Normal rotation of distributor rotor
4. Dirt or carbon on distributor points

5. Loose or broken rotor brush contacts
6. Open circuit in high tension coil
7. Loose or open ignition switch contacts
8. Loose ammeter connections

A quick inspection of the distributor will tell whether the trouble is in that unit. With a test lamp broken circuits in the primary can be detected quickly. Failure of the distributor points to open and close properly may be due to improper setting, worn cam lobes, worn rubbing block on the movable point or a defective distributor drive. This latter condition may be caused by stripped drive gears, either on the camshaft or on the distributor shaft. It may be caused by shearing of the drive coupling, due to either breaking off of the key or wearing off of the slot in the secondary drive shaft. Now is the log-

*Arrows point to critical points in the distributor which should receive periodic inspection and service to insure best possible engine efficiency*



ical time to inspect the rotor, the condition of the breaker points, point tension and the automatic spark mechanisms, both vacuum and mechanical.

If conditions point to a defective ignition coil, the mechanic can make a quick check in the following manner without removing it from the engine. Disconnect the primary lead and high tension lead from the coil and connect a test lamp to each of the low tension terminals of the coil. If the lamp does not light, it is a sign that the primary circuit is open. In making a check of the secondary circuit one test point is held on the high tension terminal and the other on the low tension terminal. If the winding is not open, sparks will be noted at the point of contact of the point. With single wire systems, the coil can be tested for grounded windings by holding one test point on the coil case and touching the other point to the high and low tension terminals. Lighting of the lamp or sparks at the point of contact indicate that the windings are grounded.

The driver reports that "The ammeter shows steady discharge when the engine is turned over." This would indicate to the mechanic any one of the following conditions:

1. Contact points are set too wide.
2. Lobes on shaft are worn.
3. Worn rubbing block.
4. Points are grounded to distributor body.
5. Rotor is grounded to the distributor shaft.
6. Condenser lead is shorted to distributor body.
7. Primary winding of coil is shorted.
8. Grounded wires in any of primary wiring.
9. Ammeter is inaccurate.

A quick check of the distributor while the engine is being turned over will show whether the points are opening and closing properly. A test lamp will quickly show whether the rotor or the points are grounded, as it will show up any ground in the primary wiring. Another way to check the rotor is to touch one of the high tension leads to the shaft recess of the rotor and the other to the high tension conductor, while the engine is turned over. A spark indicates that there is a short in the rotor.

But suppose the driver reports, "Normal oscillation of the ammeter



hand when starter is used." It will be necessary now to consider several factors.

First, it is assumed that the fuel system is ok and that the engine is getting proper fuel mixture. The mechanic will first remove the high tension lead from the distributor and hold it about half an inch from a good ground while the engine is being turned. If a weak, yellow spark is noted, it may be the fault of the coil, condenser or a weak battery. A defective distributor cap can be detected by placing one of the high tension leads in the center terminal socket and the other lead successively in the outer wells. A spark at the wells indicates a short of the cap.

Excessive arcing of the spark at the distributor points and burning of the points will indicate condenser trouble. The condition of the condenser can be determined by noting the condition of the contact points. Burned points may indicate high series resistance in the condenser. This can be caused by broken strands in the condenser lead or by defective connections and will cause failure at high speeds and upon starting. Point pitting is the result of incorrect capacity, and the direction of the build-up will show whether capacity is high or low.

If the condenser is under-capacity, the build-up will be on the positive point, while the negative point will be pitted. Over-capacity of the condenser will show up in pitting of the positive point, with build-up evident on the negative side.

If the condenser is found to be under-capacity, the condition can be corrected by one of the following methods: by shortening the condenser leads, by separating low and high tension coil distributor leads by moving leads closer to ground, or by mounting the coil directly to the ground, this shortening the ground lead. However, this is only a field expedient. If accurate information is desired, the 4-way condenser tester should be used to test for capacity, breakdown, low insulation resistance and high series resistance.

It is still not known, however, whether the spark is reaching the plugs at the proper time. A quick check on timing can be made by turning piston number 1 to top dead center on the compression stroke and noting the position of the distributor

## TROUBLE SHOOTING GUIDE

### From Engine Operation

1. **ENGINE DIES, HARD TO START**  
Weak battery  
Weak condenser  
Improper timing  
Dirty points  
Improperly adjusted points  
Weak coil  
Improper spark plug gap  
Fouled spark plugs  
Moisture on wires, plugs  
Defective distributor parts
2. **BACKFIRES ON STARTING**  
Improper timing  
Improper point gap setting  
Fuel troubles  
Valve troubles
3. **MISFIRES AT IDLE**  
Weak battery  
Fouled spark plugs  
Spark plug gap too wide  
Defective condenser  
Sticking breaker point arm  
Cracked distributor cap  
Defective distributor rotor  
Point gap too wide  
Dirty, corroded points  
Poor ground at distributor  
Incorrect spark timing  
Loose connections in primary circuit  
Worn distributor shaft bushings  
Worn distributor shaft cam lobes  
Leaking high tension wires
4. **MISFIRES AT HIGH SPEED**  
Any condition in No. 3  
Weak ignition coil  
Weak breaker point tension  
Bent, misaligned distribution shaft  
Defective vacuum advance  
Defective mechanical advance  
Incorrect spark plug heat range  
Fuel troubles  
Valve troubles
5. **PRE-IGNITION AT HIGH SPEED**  
Timing too far advanced  
Defective mechanical advance  
Incorrect type of spark plug  
Carbonized spark plug electrodes  
Fuel troubles—poor grade  
Cooling troubles — engine runs too hot
6. **BACKFIRES AT HIGH SPEED**  
Wet high tension wiring  
Crossed spark plug wires

### From the Driver's Seat

1. **STARTER WON'T WORK**  
Low battery  
Loose battery cables  
Dead battery cell  
Defective starter switch  
Defective starter
2. **STARTER FAILS, LIGHTS DIM**  
Weak battery  
Loose connections  
Dead battery cell  
Battery terminals corroded
3. **STARTER HUMS, LIGHTS BRIGHT**  
Broken starter spring  
Dry starter drive  
Damaged flywheel teeth  
Misaligned shifter fork
4. **STARTER LOCKS, LIGHTS DIM**  
Broken flywheel teeth  
Bent, misaligned starter drive  
Loose starter mounting
5. **AMMETER DEAD**  
Broken wires in primary circuit  
Loose ammeter connections  
Open circuit in ignition coil  
Defective ignition switch  
Contact points set too wide  
Burned, defective rotor brush  
Corroded distributor points  
Defective distributor drive  
Poor ground at distributor
6. **AMMETER SHOWS DISCHARGE**  
Contact points set too close  
Shorted condenser  
Shorted primary winding in coil  
Grounded distributor points  
Grounded distributor rotor  
Worn distributor shaft cam lobes  
Worn rubbing block
7. **AMMETER OSCILLATES**  
Improper spark timing  
Weak ignition coil  
Weak condenser  
Improper point setting  
Improper spark plug gap  
Corroded distributor points  
Shorted high tension wires  
Defective distributor cap  
Moisture on coil, wires, spark plugs

Cracked spark plug porcelain  
Distributor governor sticking  
Improper ignition timing  
Valve and carburetion troubles

rotor. It should point to number 1 contact. Of course, this is only a rough check of timing, but will be accurate enough to show whether that is the reason for failure to start.

### Spark Plugs Tell a Story

**T**HE spark plugs themselves are the next thing the mechanic will check. It is not often that defective spark plugs will cause complete engine failure, but badly burned or corroded or oil-soaked plugs may keep the engine from starting, especially on a cold morning or in wet weather.

Before servicing the spark plugs, the mechanic should make a study of the conditions he finds, as the appearance of the plug will show up

many other engine troubles. Checking a potential breakdown now will save time and money in the long run.

Oily plugs may indicate:

1. Worn pistons or cylinders.
2. Worn, stuck piston rings.
3. Too rich a carburetor adjustment.
4. Excessive choking.

These conditions indicate that too much oil or fuel has reached the combustion chamber. It means that the engine is operating inefficiently and that remedial measures are necessary. Sometimes the use of a hotter type plug will temporarily correct the condition, but such a procedure is not a cure-all.

(TURN TO NEXT PAGE, PLEASE)

## ... Ignition System

(Continued from Page 45)

If burned electrodes or broken insulators are found when the mechanic removes the plugs, it may indicate the use of too hot a plug, that the engine is operating too hot, that the plugs were not properly tightened in the head, insufficient tappet clearance, too lean a fuel mixture, improper spark timing, heavy accumulations of carbon in the combustion chamber or use of poor fuels.

If red, blistered spots are found on the insulator, it is an indication that the fuel mixture is improper. The mechanic should check the air cleaner, to see that it is not restricted, causing too rich a mixture. He should check the carburetor for high float level and too rich an adjustment as well as for leaks and dirt accumulations. He should make tests of the fuel pump pressure as well as capacity, as either may affect the carburetor mixture if parts are worn. It is sometimes hard to determine if certain conditions result from a rich carburetion or from presence of excessive oil in the combustion chambers. Compression tests and use of the exhaust gas analyzer will show which it is.

### Other Engine Complaints

**T**HE driver may report the fact that the "Engine misfires at idle." If carburetion is ok, it will be wise for the mechanic to consider the following possibilities:

1. Weak battery.
2. Fouled spark plugs.
3. Defective condenser.
4. Spark plug gap too wide.
5. Sticking breaker point arm.
6. Cracked, burned distributor cap.
7. Defective distributor rotor.
8. Poor ground at distributor.
9. Incorrect spark timing.
10. Leaking high tension wires.
11. Dirty, corroded points.
12. Worn distributor shaft bushings.
13. Loose connections in primary circuit.
14. Worn distributor shaft lobes.
15. Carburetion troubles.

"Missing at high speeds" may be caused by most of the conditions outlined above, as well as such factors as timing advanced too far, weak ignition coil, weak breaker point tension, misaligned distributor shaft, defective vacuum advance, incorrect spark plug heat range or defective spark plugs. In addition the mechanic should consider such carburetion troubles as poor fuel, water in fuel, low float level, defective fuel pump, weak valve springs, burned valves and similar conditions.

If "backfiring at high speeds" is reported, and fuel troubles have been checked, the mechanic will inspect spark timing, distributor vacuum and mechanical advance, spark plug gaps and spark plug heat range.

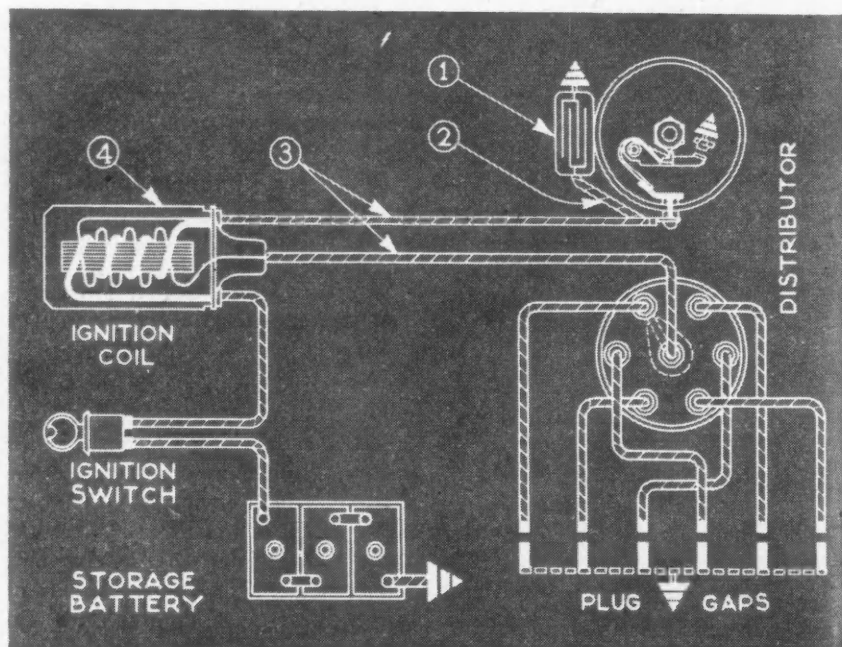
"Spark ping" is easily detected, but not as easily corrected. If conditions of this type are reported, a quick check may reveal that the timing is too far advanced, that the mechanical advance is inoperative, that the spark plugs have carbonized electrodes. Spark plugs of the wrong heat range can also contribute to engine ping.

Many times, however, engine detonation is caused by a poor grade of fuel or water in the gasoline. Cooling system troubles contribute to this condition in many cases, and the mechanic will make a careful check of engine temperature before continuing with ignition checks.

If "lack of power" is reported, ignition checks should include a check on timing, spark intensity and items listed above. "Poor acceleration" may be blamed on fuel and carburetion only after these checks. However, a driver's report of this kind should be weighed carefully, as loads, road conditions, head winds and the inherent nature of the vehicle may be the only trouble.

It should be remembered that the procedures outlined in this article are only quick checks and adjustments of the ignition system based upon driver's reports. With a regular periodic service, the entire system would be completely inspected from the battery to the spark plugs. If defective units were found, they would be tested, overhauled and adjusted on reliable instruments, as a scientific approach to ignition and electrical system tune-up is the most reliable way to insure economical, efficient engine operation. The procedures outlined will accomplish a good check of the system and improve operation, however, until the regular inspection period comes around.

*Schematic diagram of the entire ignition system showing primary and secondary circuits and tracing flow of current from battery to plugs*





## LAUGH IT OFF

Two truck mechanics who had just knocked off for the day, were riding home on a bus when one noticed that the other had his eyes closed.

"What's the matter, Bill?" he asked. "Are you ill?"

"No," answered his friend, "I just can't bear to see women standing."

C C J

Porter: "Listen heah, boy, jes' what kind of life you been livin'?"

Washer: "Oh, ordinary, jes' ordinary."

Porter: "Well son, if yo' pulls any mo' jces out of yo' shoe, yo' ordinary life is gonna mature."

C C J

A school teacher one day, during the hour for drawing, suggested to her pupils that each draw what he or she would like to be when grown up. At the end of the lesson one little girl showed her an empty paper.

"Why," said the teacher, "isn't there anything you would like to be when you grow up?"

"Yes," said the little girl, "I would like to be married, but I don't know how to draw it."

C C J

The middle-agers were sitting around the club talking of their past lives. Up spoke one: "I've led a pretty good life. There's only one thing I'm ashamed of. My mother caught me in a very shameful act."

"Think nothing of it," said one, "all us kids did that."

"Yes, I know, but it was only yesterday that she caught me."

C C J

"My dear, I never imagined you would marry the man you did," quipped Catty Cora.

"Neither did I," replied Safety Sadie. "I dislike his ways, 'tis true, but I sure do adore his means."

C C J

TOMMY THE PARTS CLERK SAYS THAT HE THOUGHT HIS LAST ROMANCE WAS TRUE LOVE, BUT IT TURNED OUT TO BE ONLY A PASSING FANNY.

C C J

A necking party is an affair which invariably lasts until someone gives in, gives up, or gives out.

The manager of a truck terminal in a small western town had been bawled out several times by the home office for doing things without orders from headquarters. One day a circus played the town and during the performance a large ferocious lion escaped. Two days later the Manager of Operations for the trucking firm received the following startling telegram: "Lion on platform eating Freight Checker. Wire instructions."

C C J

Sign in a fleet shop lavatory:

"WE AIM TO PLEASE. WILL YOU AIM, TOO, PLEASE?"

C C J

The young man was patiently waiting in front of the Post Office window behind which two female clerks were busy talking. "Her evening gown," said one, "was of metallic brocade, had a braided bow, and full sleeves."

At this point the young man broke in with: "I wonder if you could get me a neat purple stamp with a perforated hem, the whole business treated with a coating of lovely mucilage and costing about three cents?"

C C J

Mechanic: "Didn't your old man ever take you aside and tell you about t'ings?"

Mechanic's Helper: "Sure, but there was always so much noise in the pool room that I couldn't hear him."

C C J

Jack: "My brother is having a football romance with a wealthy, 85-year-old woman."

Jill: "What do you mean by a football romance?"

Jack: "He's going to marry her and wait for her to kick off."

THEN THERE WAS THE BURLESQUE QUEEN WHO REFUSED TO PUT ON HER ACT BECAUSE SHE DIDN'T FEEL IN THE NUDE.

C C J

The head of a big trucking outfit was giving fatherly advice to his son who was going into business for himself.

"Son, I want to impress upon you right at the start—honesty is always the best policy."

"Yes, Dad, I'll remember that."

"And, by the way," added the pater, "I'd advise you to read up on corporation law. You'll be surprised at the number of things you can do in business and still be honest."

C C J

Joe, the yardman, says he certainly has got a dumb ice man. The other morning he and his wife overslept and were awakened by the ice man coming into the bedroom looking for the ice box.

C C J

There was a lady named Mrs. Pratt. Who had triplets—Tom, Tit and Tat, There was no difference in the breeding.

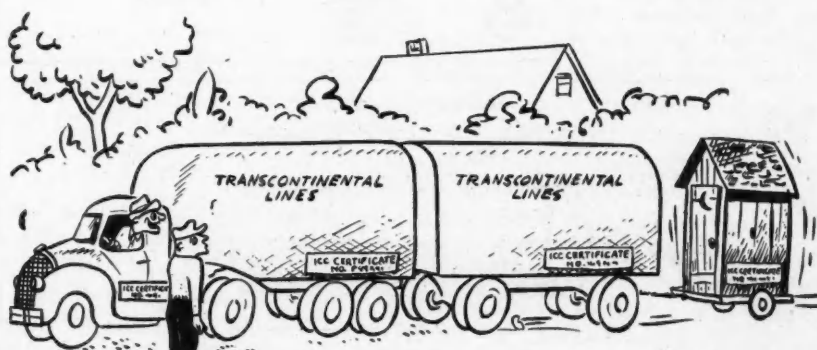
But there was in the feeding. Because there was no tit-for-Tat.

C C J

Prosecuting Attorney: "This plaintiff says that after he fired a shot he saw you running from his chicken house."

Defendant: "If'n he done done dat, he can count bullets comin' out ob a machine gun."

Resume Work



"I had to prove convenience and necessity."





**\$5 FOR ALL HINTS  
PUBLISHED  
EACH MONTH**



**\$25 FOR THE BEST  
HINT PUBLISHED  
EACH MONTH**

# Shop and

Now is the time for all good mechanics to make themselves some extra cash. All . . . yu gotta . . . do, is sit down and write up one of your shop's favorite short cuts to maintenance—or else some info on a durned good homemade shop tool. It might be a tip on salvaging some of that junk hang-around the back room—and it could be on an improved repair method that your shop has developed. You don't like to write? Well, draw a picture—shoot us a diagram with a few simple words. We'll attempt to figure it out. We will do the work, but we want your idea. For five fms, men, you can't go wrong. Give it a try, and you may hit the jack pot of \$25, with five bucks the absolute minimum for an accepted shop or salvage tip.

## 2. Chain Salvage

by E. O. Wilson

H and J Truck Co., Los Angeles, Cal.

Save worn-out drive chains for repairing broken load chains and for putting new hooks on old chains.

Simply put links of chain to be joined over the open connecting link of the drive chain and replace the side link. Drive down to about  $\frac{1}{8}$ -in. clearance, cut ends of pins off and peen or rivet over. Heating will simplify the riveting. Hooks can be put on in the same way.

## 3. Improved Tow Bar

by Joseph Dellapent

New England Trans. Co., New York City

Any tractor may be pressed into service as a towing unit if this type of tow bar is used. This tow bar has a trailer king pin welded to its forward end. This is connected to the fifth wheel and the other end secured to the vehicle to be towed. This type of connection eliminates slack and wander of the towed unit and is much safer than the use of a chain or other means. Coupling and uncoupling is a cinch.

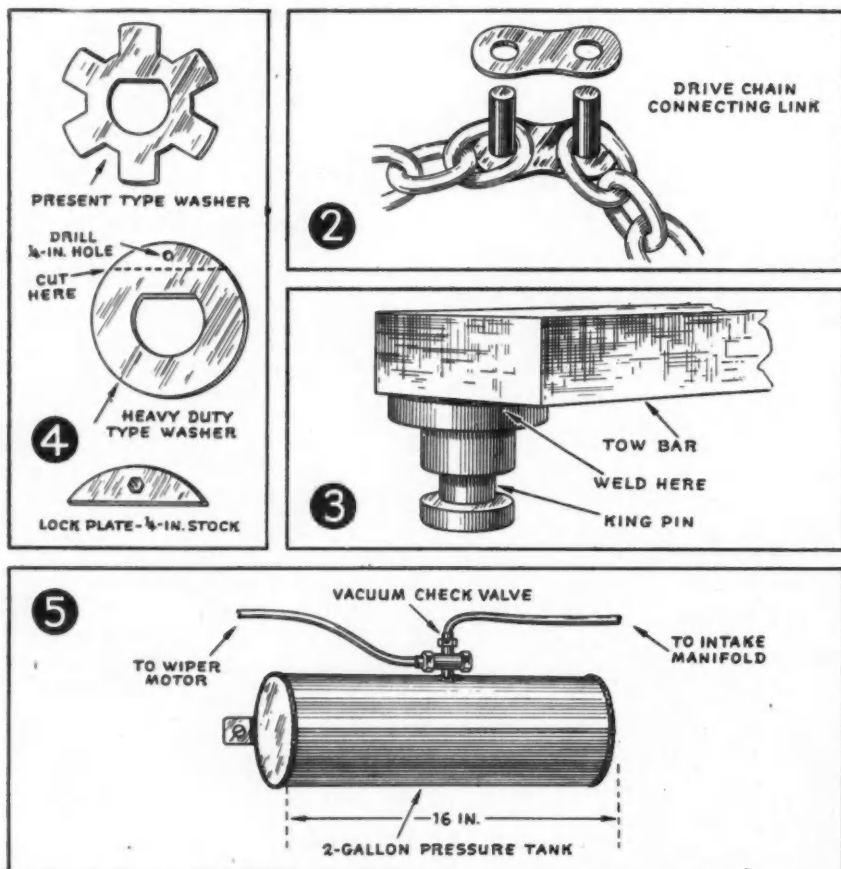
## 4. Shackle Lock Washers

by Howard L. Kline

Beth Allen Sales Co., Allentown, Pa.

The accompanying drawing shows a lock washer used on all WA and WB Model White trucks on the rear spring shackles. This washer is continually loosening so that the nuts fall off.

I made some heavy-duty washers out of  $\frac{1}{4}$ -in. strap iron and they work very well. I drilled a hole in the center and filed a flat side to cor-

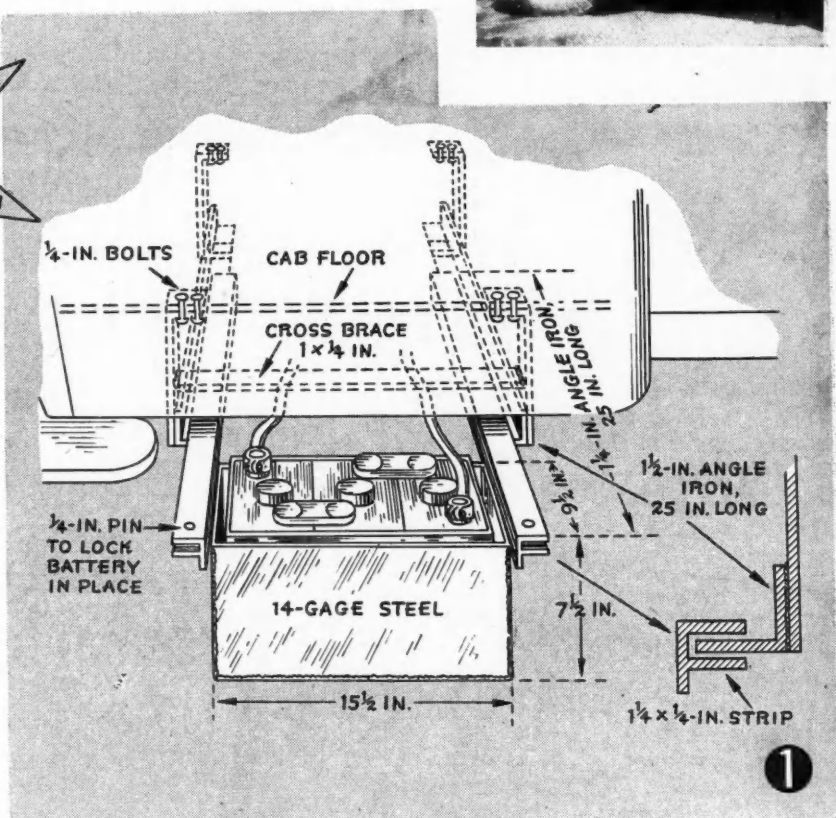


# Salvage Hints



respond with the original washer. I cut off a section of this round washer as shown in the drawing. This piece was drilled and tapped for a  $\frac{1}{4}$ -in. SAE cap screw so that it could be held in place against the main washer when the shackle was assembled.

This piece solves our problems of loose shackle bolts.



## 5. Windshield Wiper Tip

by G. E. Upperman, Shop Supt.  
Continental Baking Co., Wheeling, W. Va.

In order to improve the performance of our vacuum windshield wipers so they will not stop on sudden acceleration and so they will continue to operate up the hills, I have made a change in construction that has solved our problem.

I made a reserve tank and mounted it on the front of the dash. I made this one out of galvanized rain spout, 16 in. long and 5 in. in diameter. (However, any pressure tank will do.) Into this I installed an air horn check valve and connected the system as shown in the drawing.

This device will now allow a wiper to run approximately 1 min. after the engine is shut off, and has insured better vision during all operations.

## 1. Sliding Battery Box

by Claire E. Ellsworth  
Ellsworth Sales Co., Eagle Grove, Iowa

Here are photographs and a drawing of a battery box I have made and mounted on our International trucks. This was the only space available for mounting of the battery after our engine change but the modification has worked out very well, giving convenient access to the battery for inspection and changes.

The box itself is of 14-gage sheet steel welded as shown. It is 15 1/2 in. long, 9 1/2 in. wide and 7 1/2 in. deep. The slotted sliding rails are welded to the end pieces of the battery box. These are made from 1 1/2-in. angle iron 25 in. long. A flat strap iron

$\frac{1}{8}$  in. thick and 1 1/4 in. wide is welded to angle iron to form the slot.

Support brackets are bolted to the cab floor at the proper spot and are welded at the bottom end to flat strap iron pieces which fit into the slotted slide rails. These are made from 1 1/4 by 1/4-in. strap iron stock.

When the battery is in place, a  $\frac{1}{4}$ -in. pin is dropped through the hole drilled through the rails. This arrangement allows the battery to slide out away from the cab, where it can be checked easily. When in place it is secure as the regular battery box.

| Month of <u>April</u> 19 <u>46</u> |  |              |        |               |                |      |      |   |        |                       |            |               |              |
|------------------------------------|--|--------------|--------|---------------|----------------|------|------|---|--------|-----------------------|------------|---------------|--------------|
| Schober                            |  |              |        |               |                |      |      |   |        |                       |            |               |              |
|                                    |  | 1            | 2      | 3             | 4              | 5    | 6    | 7 | 8      | 9                     | 10         | 11            | 12           |
|                                    |  | SL-4         | SL-4   | SL-X          | SL-D<br>1892   |      | D-4  |   | D-4    | D-B<br>1171           | B-4        | B-CL<br>4WP   | B-CL<br>1639 |
| 20                                 |  | C-DY<br>1395 | DY-P/L | DY-SL<br>1365 | SL-X           | SL-X | SL-X |   | SL-P/L | SL-LV<br>OSWALT<br>DH | LV-X       | LV-X          | LV-X         |
| 21                                 |  | SY-D<br>1639 |        | D-4           | D-B<br>Schober | B-4  | B-4  |   | B-4    | B-CL<br>MASTERS       | CL-4<br>WP | CL-FW<br>1919 | FW-4         |

## Simple System Keeps Track

BRIDGEWAYS, INC.  
TRANSPORTATION DEPARTMENT SERVICE CALLS

NO. 2301  
DATE 2-5-46  
CALLING FROM Monsieville, Ind.  
CAN BE REACHED Spangh Motor Co. TIME 1000

TELEPHONE NO. 173 TRAILER T2233  
TRACTOR 1721 OWNER Ray Beattie  
DRIVER Paul Meyers DESTINATION EV  
ORIGIN D  
LOCATION 1/2 mile southeast of D.  
NEAR D HI-WAY Ind. 67

NATURE TROUBLE Motor trouble, broken valve - head gasket blown  
NO. TIRES BLOWN OR FLAT \_\_\_\_\_ TRACTOR SIZE \_\_\_\_\_  
TRAILER SIZE \_\_\_\_\_  
NEW OR USED \_\_\_\_\_  
DEPARTURE \_\_\_\_\_ DESTINATION NOTIFIED Yes  
DISPOSITION I sending tractor to relay load  
WRECKER USED \_\_\_\_\_  
REMARKS Edna Bennett + took tractor departing I at 1200 to pick up load  
CALL RECEIVED BY A. H. M.  
Used Paul Meyers \$20.00 1/2 Western Union.

Fig. 2. Transportation Service Call, 7½ x 8½ in., supplies fleet with detailed reasons for all delivery delays

WE HAVE 400 POWER UNITS operating for us between Michigan, Indiana, Ohio, Illinois, New York, Pennsylvania, West Virginia, Kentucky and Missouri, traveling over 40,000 miles nightly. We have 37 terminals strategically located in our territory as well as a number of checking stations and fuel and supply depots enroute between these terminals where such necessary items as gasoline and oil can be purchased or charged and equipment serviced.

The general transportation department must have a clear cut and up-to-date picture of all equipment loading, unloading, held at terminals for lack of power, out of service, non arrivals and moving over the highways. We must know from what point and when a unit is leaving, where it is going, exact arrival time and if it is delayed more than two hours enroute, why and where. We want this information quickly to eliminate undue wastage of time. The system

we employ of providing movement information between terminals and Detroit, and between our wayside points and our headquarters in Detroit, is the key to the satisfactory brand of service we are rendering to our customers.



S. S. Marr



## BRIDGE

14 15 16 17 18 19

|   |               |             |                          |             |
|---|---------------|-------------|--------------------------|-------------|
| CL-AR<br>WERTZ                                | AK-4<br>4/4   | AK-4<br>4/4 | AK-C<br>SEEMAN           |             |
| LV-P<br>1399<br>1-P<br>OR W<br>Brown<br>Field | P-4<br>4/4    | P-C<br>1861 | T-C<br>OT P<br>Goldsmith | C-4<br>4/4  |
| FW-P<br>1867                                  | FW-SL<br>1867 | SL-4<br>4/4 | SL-EV<br>1184<br>2H      | EV-P<br>4/4 |

## of Trucks

We have set up a detailed system with close supervision for obtaining and recording movement information which, while we have kept it simple, fully realizes its purpose; i.e., the furnishing to us constantly full and timely information of all our equipment.

During the night, each terminal wires to the general transportation department at Detroit a complete line-up of equipment, moving or on hand. This information is assembled and rewired to the destination terminals so they will know what to expect and plan for during the day. The following morning, and through the day, supplemental wires are received by the general transportation department reporting additional, corrected and relayed departures. This, likewise, is immediately rewired to the destination terminal. We can then foresee what terminals are in need of help and obtain same, eliminating delay of shipments.

This information is then posted, in code, in what we call our "00 to 99" book, Fig. 1. This is a ruled double-page ledger which furnishes us at a glance a complete day-by-day record

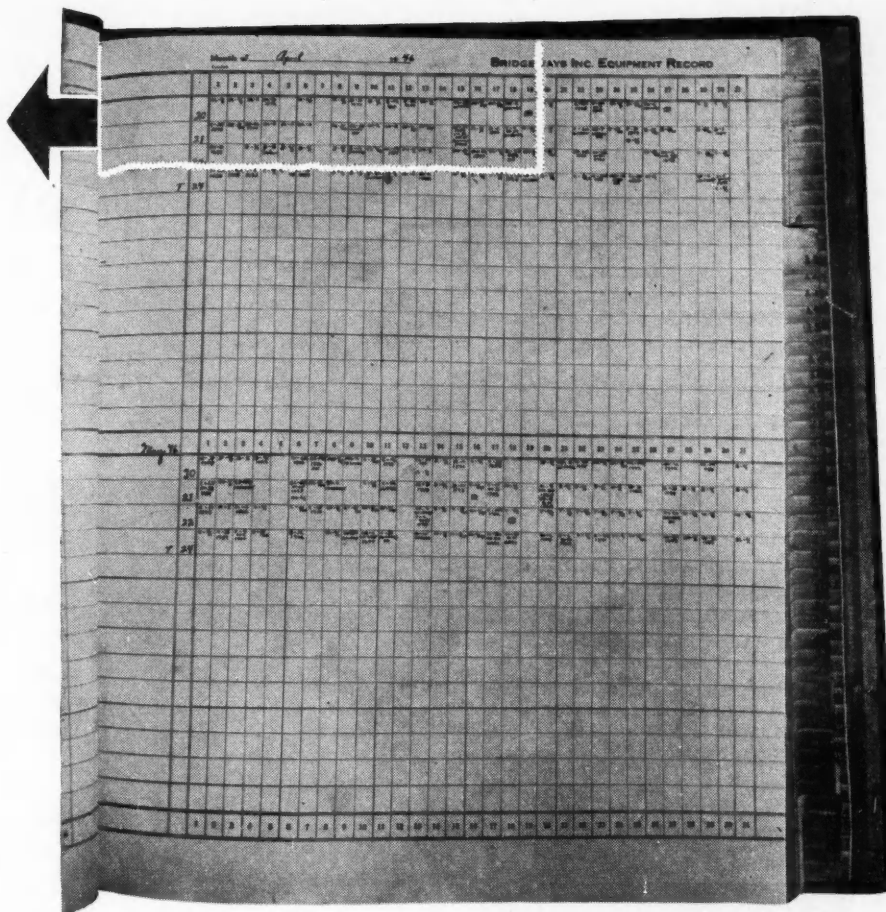


Fig. 1. This is Bridgeways' "00 to 99" book in which day-by-day movement of all vehicles is permanently recorded. Enlarged section at upper left shows coded notes explained in the article

**Inter-terminal code communication system,  
plus delay reports and road inspectors,  
supply fleet with 24-hour information  
on location and activity of every vehicle**

**by S. S. MARR**

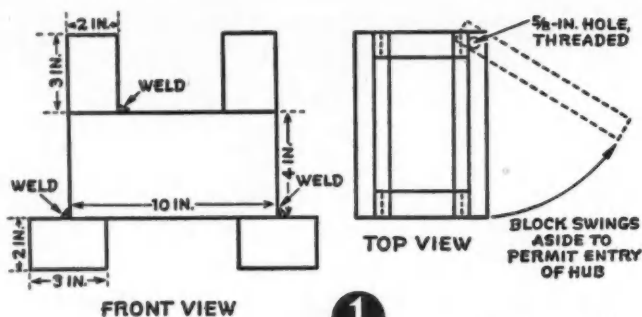
**Transportation Manager, Bridgeways, Inc., Detroit**

of all equipment in our service, movements, breakdowns, etc. One of these books covers four months operation of all our equipment.

One-half of the page accounts for fleet movement of both tractors and trailers for a full month. To the out-

side of each page is attached a numbered tag which carries the last two numbers of either the tractor or trailer.

For example, if we wish information regarding trailer 2167, we turn  
(TURN TO PAGE 122, PLEASE)

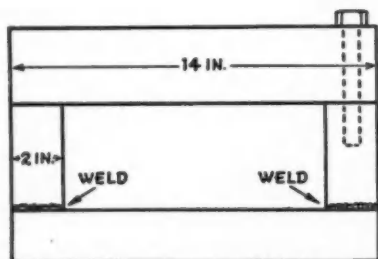


FRONT VIEW

1

MILD STEEL STOCK  
--WELDED

4 PIECES- 2 x 3 x 14 IN.  
2 PIECES- 2 x 4 x 10 IN.  
1 BOLT- 5/8 x 6 IN.



RIGHT SIDE VIEW

Above. Drawing of jig used to rivet wheel hubs to brake drums. Right. Jig is a 3-tier pen made of billets into which drums fit while being riveted



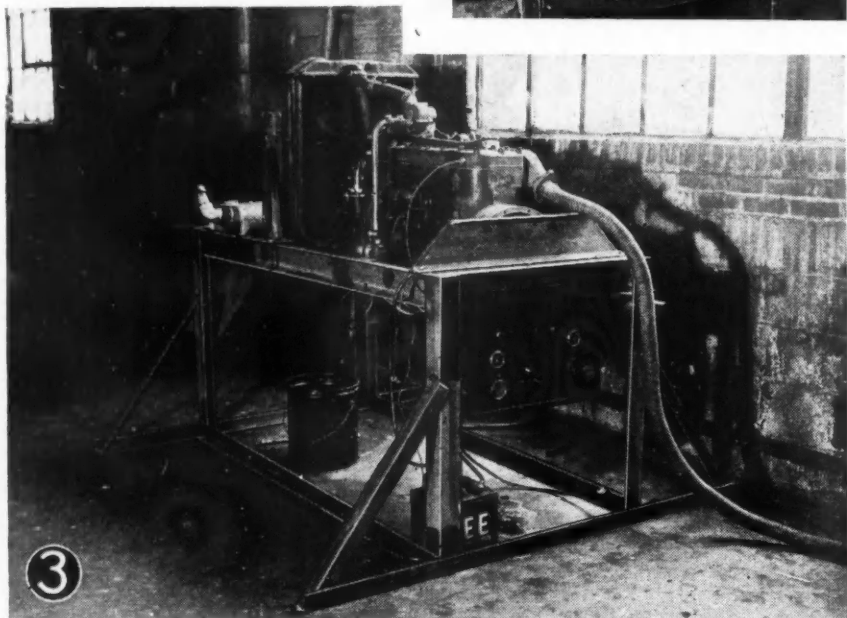
2

## Maintenance Men

by JOHN KRILL

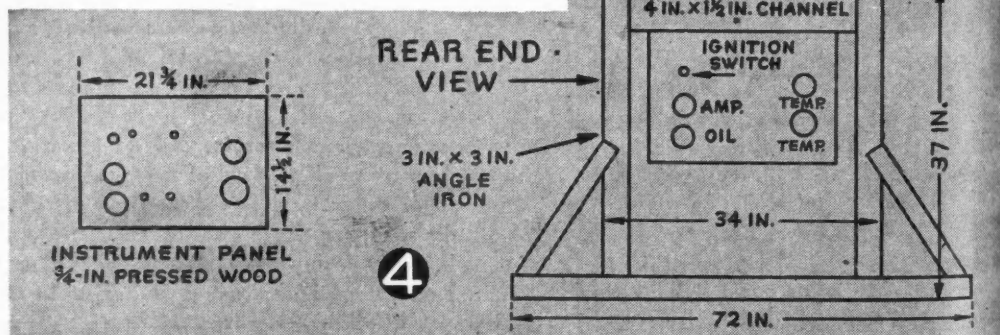
THE ISALY DAIRY CO., Youngstown, Ohio, is a fleet operator having 123 trucks ranging from retail deliveries to heavy wholesale units. With a fleet of this size special service tools must be employed to expedite repairs. And in fleet supervisor Karl Koch, Isaly has a man with no little ingenuity in creating needed tools. Ably assisted by Richard Conroy, assistant supervisor, maintenance is performed smoothly and with dispatch.

The beauty of these special service tools devised and employed by Koch and Conroy lies in their simplicity and efficiency, plus time saved by their use. For example, a jig was made to rivet wheel hubs to brake drums. The drums are removed from hubs when scored. If the drum can be made usable by turning, it is replaced. But, as Mr. Koch pointed out, if the drum has been turned on



3

Isaly's engine run-in stand adjustable to any size engine. Right. Drawings show dimensions and construction details



REAR END VIEW

3 IN. x 3 IN.  
ANGLE IRON

4

INSTRUMENT PANEL  
3/4-IN. PRESSED WOOD

# Make own **SPECIAL**

## Service Tools

previous occasions, then it is discarded and a new drum is riveted to the hub.

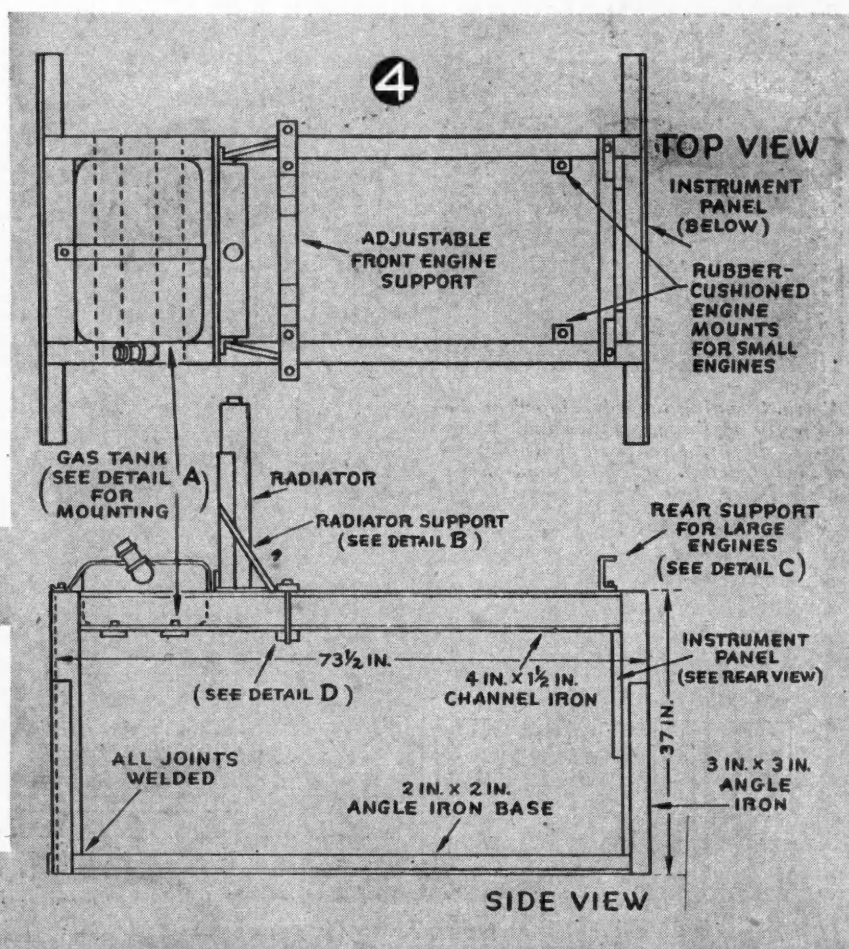
As can be seen from the illustrations, Figs. 1 and 2, the jig is simply a three-tier pen made of mild steel billets. One of the top billets is secured to the body of the jig by a bolt that acts as a pin. This gate is swung open to permit the entry of the hub, drum side up. The gate is swung shut and the hub is penned within the enclosure of billets, which are all welded to each other. The top billets act as anvils for the ram.

The rivet is placed in position and the ram of the 60-ton press, using 20 tons pressure, performs the cold rivetting operation easily.

With such means for replacing bad drums, this task can be easily and quickly done, and the temptation to

(TURN TO NEXT PAGE, PLEASE)

**A simple, efficient brake drum riveting jig,  
engine run-in stand, and large parts cleaning tank,  
designed and constructed by fleet superintendent,  
expedite work and improve maintenance quality**

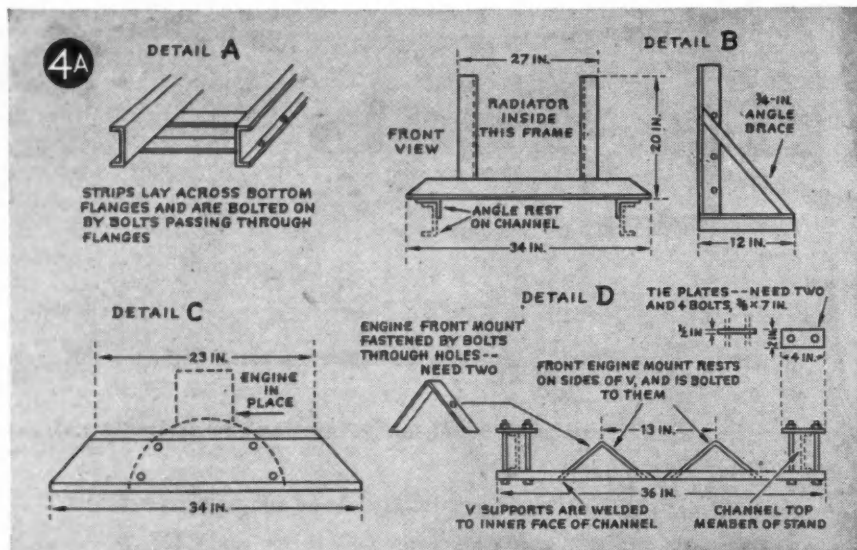


*Two views of the engine test stand, showing location of gas tank, radiator, adjustable engine supports and instrument panel. More detailed drawings on next page*

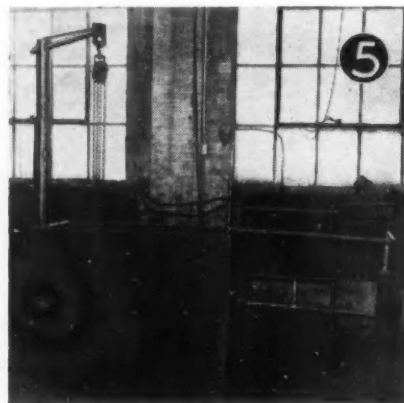


## ...Special Service Tools

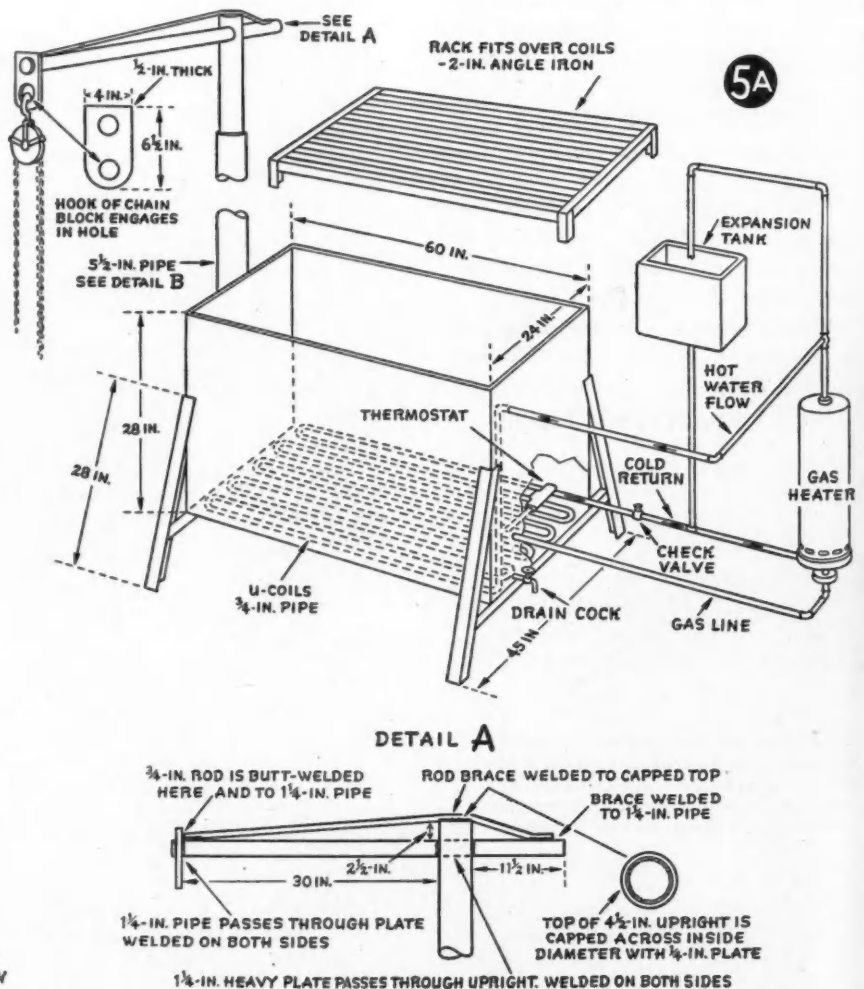
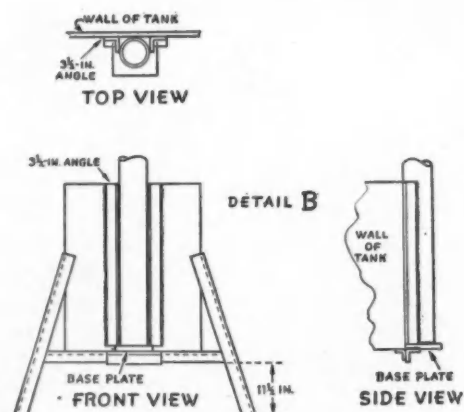
(Continued from Page 53)



Additional drawings showing details of construction of Isaly's engine run-in stand



Above. Cleaning tank developed in the shop for washing engines and heavy parts. Right. Drawings show details of construction of tank and hoist



let a badly burned or scored brake drum go is removed. As for quality of the job when done, it simply could not be done better from the standpoint of performance.

### Engine Run-in Stand

**A**NOTHER brain child of the versatile Mr. Koch is the running-in stand that handles all types of engines used in the fleet. Here the unorthodox method of mounting the gasoline tank in front of the radiator is used for the sake of compactness. It also removes a bulky obstacle from the immediate vicinity of the engine being run in. This gives the mechanic plenty of elbow room and visibility around the engine itself, and eliminates peering around or crouching to reach any part of it.

As shown in Fig. 3, this is strictly an all-welded job. Notice how straddle-supports welded to the angle iron legs preclude the possibility of an accidental overturning of the stand when setting in or removing engine. Though built primarily to handle

small engines, this stand will efficiently handle many other sizes.

With the engine running under self-generated power, it is easy to check its performance. Every kind of engine check can be made, for there is plenty of room to move about, and the engine is completely exposed from all sides. For running in small engines, regular rear mountings have been bolted to the frame. Only a slight change is needed to accommodate other types.

This change consists of ignoring the small engine mounts entirely, though not removing them from the stand, and substituting a heavy piece of channel iron, 2 x 6 x 34 in., to act as a rear engine support. As shown in the detailed drawing (Fig. 4A, Detail C), this support has holes drilled through it. Bolts pass through these holes and into the tapped holes of the flywheel housing. (NOTE: Attach this rear support to the flywheel housing first, before attempting to set the engine in the stand. A single bolt on each end of the sup-

port fastens it to the top of the running-in stand.)

The front support, (Fig. 4A, Detail D), is adjustable to meet the front mounting brackets of the engines. Two strap iron, inverted V-shaped supports are welded to the adjustable front support. The front of the engine is brought up between the inverted V's. When the holes in the mounting brackets of the engine match the holes in the sides of these inverted V's, bolts are set in and tightened. Then the adjustable support is tightened to the top of the stand by the plate straddling the top of the channel iron rail.

The gas tank is mounted simply, as shown in Fig. 4A, Detail A. It lies within the channel iron frame across which 2-in. strap iron has been bolted to form a bed for the tank. A metal strap is used to hold the tank down by being bolted across the tank and to the frame. (See top and side views of Fig. 4.)

An old radiator is used when running in small engines. Set in an an-

gle-iron frame, Fig. 4A, Detail B, the radiator moves easily to any position on the top rails of the stand. For large engines, an old truck radiator also is used, though Mr. Koch points out that the one removed from the truck undergoing repair can easily be used.

A flexible hose is coupled to the motor exhaust and led outside. Any escaped fumes are disposed of by the ventilator fan set in the window above the stand.

A permanently mounted instrument board is located between the rear legs of the stand, as shown in Fig. 4, rear view. On the board are the ignition switch, ammeter, oil gage, electrical temperature gage, and a thermometer-type gage for indicating temperature of engines not furnished with electrical temperature gages.

An ordinary storage battery starts the engine. Standard hook-up of battery to engine is practiced. In the event the engine is too stiff to be turned by one battery, another is coupled to it to supply sufficient power.

Another feature of this stand is the lack of bulk and weight. It is light enough to be moved to any part of the shop with no great strain. Mr. Koch suggests that, for crowded shops, the stand could be mounted on wheels that would permit shoving it out of the way at will.

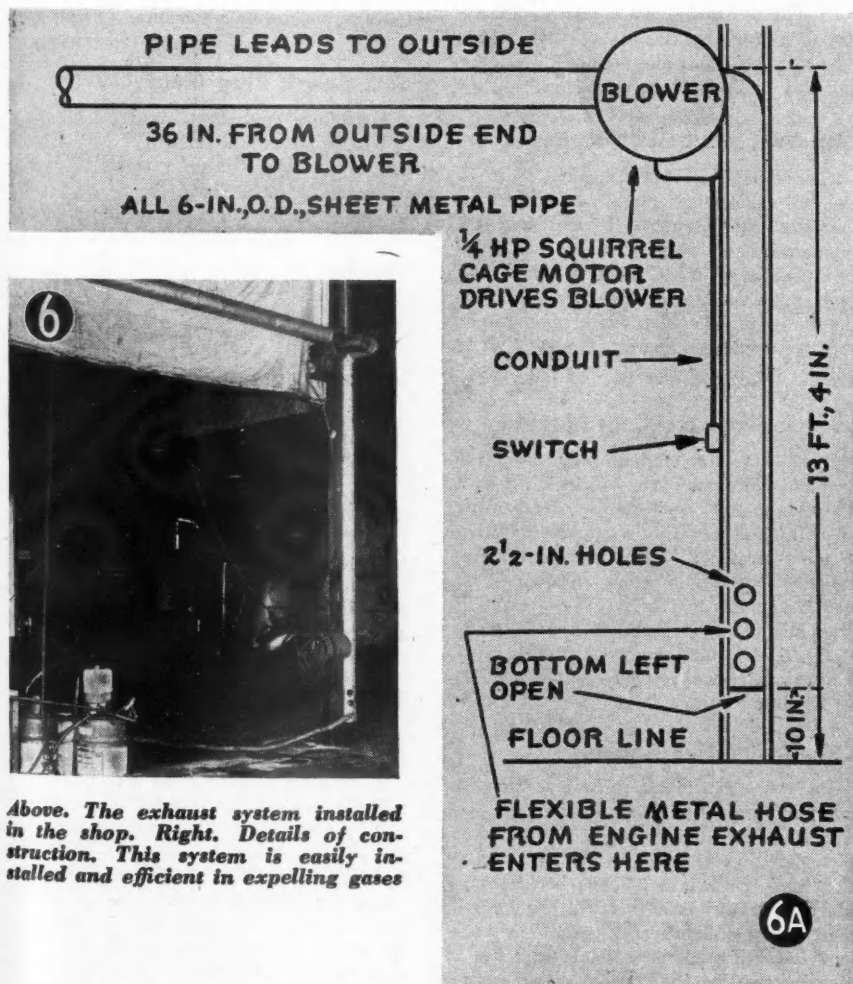
There is always a spare engine to replace the one removed from a truck. While one engine is being repaired, the spare engine keeps the truck in operation.

#### Engine Cleaning Tank

ANOTHER device that sees constant use is the tank for washing engine blocks and large and heavy parts, shown in Fig. 5. A grease-and oil-cutting compound is used in the tank in which the engines are submerged. For greatest efficiency and economy of time, the solvent must be kept hot. Mr. Koch keeps his at 100 deg. F. A hotter solution will evaporate too quickly for economical use, he finds.

Heating the solvent is cheaply accomplished by using a gas side-arm heater. As indicated in Fig. 5A, U-coils of 1/2-in. pipe with return bends lie on the bottom of this 60 x

(TURN TO PAGE 146, PLEASE)



Above. The exhaust system installed in the shop. Right. Details of construction. This system is easily installed and efficient in expelling gases



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## PUBLICATIONS

### L31. Sludge Control Data

Valuable information on sludge problems is available in this 12-page paper on "Low Temperature Sludge in Automotive Engines." Fleetman can review the mechanical and operating variables affecting sludge formations outlined on these pages and apply corrective measures. The data outlined in this publication should be appreciated by all who are confronted with this condition in their vehicles. Get a copy now by writing L31 on the free postcard.

### L32. Tire Conservation Manual

A handy guide for any fleet is this 24-page tire manual, prepared for the fleet man in order to aid him in attaining better tire mileage. With detailed photographs showing various types of tire wear, accompanied by a list of causes and effects, this manual will show the reader at a glance how to locate and correct tire wear problems. Special sections cover contributing factors in premature tire wear and show corrective measures. Write L32 on the postcard and add this guide to your files.

### L36. Brake Reliner's Manual

Here is a publication highly favored by many in the fleet shops. This 80-page manual covering brake relining, adjustment and maintenance can be used advantageously in conjunction with the manufacturer's manual as an aid in brake service.

Each major procedure in brake work is discussed in detail, as are instructions on application of the correct friction materials. Included with this information is a troubleshooting chart, itself a valuable asset to the service man. Diagrams and drawings effectively supplement the text. Write L36 on the card for a copy.

### L39. Engine Bearing Manual

Technical data on bearing failures has been compiled into a 20-page publication and offered to the field in the interests of bearing conservation. A study of this book will aid maintenance men in analyzing their bearing failures so that longer wear can be attained. Write L39 on the postcard and complete your files.

### L40. Truck Lubrication Book

This 40-page illustrated booklet on truck and bus lubrication should be included in the files of all shops. It will make a valuable instruction aid for new mechanics as well as experienced ones. The technical problem of sludge formation is presented simply in this booklet while photographs help to explain important points. Write L40 on the free postcard for a copy.

### L56. Engine Overhaul Manual

Here is an outstanding publication the fleetman can't afford to overlook. It is a 96-page manual on engine overhauling procedures and will be a valuable addition to the shop's literature on the subject. Included is information on re-ringing, re-sleeving, diagnosing high oil consumption problems and related procedures. A study of this booklet may improve the mechanic's ring job. Get a copy today by writing L56 on the free postcard.

### L57. Truck Tire Booklet

Do you want to know how to prevent many of your tire failures—and do you want to show your drivers and mechanics pictorially what they can do to improve tire life? Here is a 34-page booklet prepared in display form that will bring pertinent tire conservation messages to your men from time to time. Each page has a clear, attractive illustration showing tire

Here is a selected list of outstanding literature offered in 1946 — reviewed again for the fleetman in case he overlooked their possibilities when first described. Order by code number.

abuse or a tire failure, and a maintenance or driving tip showing how to correct it. Let this booklet help you improve your tire mileage. Write L57 on the free postcard.

### L58. Spark Plug Guide

Mechanics and fleet owners will find this 11 x 20-in. wall chart, "Power Guide for Spark Plugs," an extremely useful reference to have above the work bench. A glance at the photographs of representative spark plugs colorfully reproduced on the chart will show the mechanic what is wrong with the plugs he removes. Write L58 on the postcard for a copy of this handy chart.

### L62. Driver Training Booklet

Published in the interests of better, safer driving, this 72-page booklet should be included as a reading "must" for every driver. The guide rules presented are practical in that they have been collected from good drivers who cover such points as how to take a curve, how to ride the bumps, how to beat blinding lights, how to park in small spaces, drive safely on ice and scores of other timely tips. Write L62 on the postcard and get a copy.

### L71. Diesel Engine Booklet

Designed to acquaint fleetmen with the characteristics of diesel engines, this 48-page booklet takes up the history of this type of engine, the fundamentals of design, the types and the advantages of two-stroke and four-stroke engines. While the booklet features lubricating problems, 26 pages are devoted to operating principles that should prove invaluable to owners of diesel trucks. Write L71 on the free postcard for a copy.





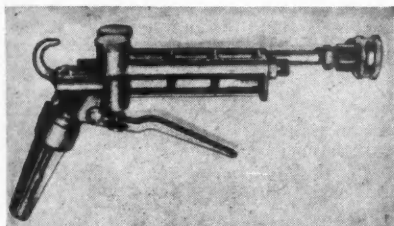
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NEW

The newest in replacement parts, accessories, shop equipment and supplies. For more details of products described and illustrated on these pages, use accompanying free postcard.

#### P91. Air-Water Gun

A new light-weight air and water gun, controlled by a finger-tip lever without the necessity for valve adjustments, has been introduced by Turco Products, Inc., Los



Angeles. The gun is designed for high-pressure rinsing and removal of loosened dirt and grease, particularly in inaccessible spots. It operates on regular air and water pressures and connects to standard fittings.

Use Free Postcard For More Details.

#### P92. Anti-Fouling Plug

The Leonard Spark Plug Co., Newark, N. J., has developed an anti-fouling spark plug especially designed for Chevrolets with 10 mm. plug openings. Basically the new plug is a standard 14 mm. plug fitted with a special 10 mm. base and a cylindrical extension which completely surrounds the points.

Use Free Postcard For More Details.

#### P93. Plastic Upholstery

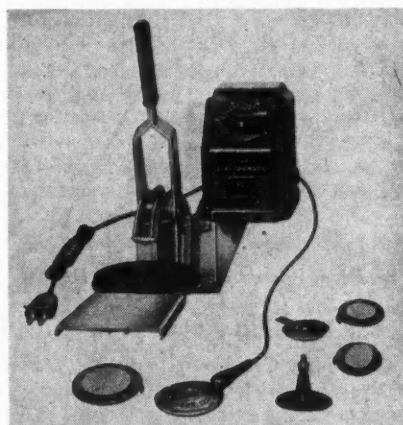
New plastic upholstery, especially designed for heavy-duty transportation seating, is now being made by United States Rubber Co. The material, known as heavy-duty Naugahyde, provides great durability

and is available in a variety of colors. Since it is 50 in. wide and put up in rolls 50 yds. long, seat patterns can be laid out satisfactorily in any direction over the entire area. Advantages claimed for the upholstery are long wear, outstanding abrasion resistance, and excellent flexing and tailoring properties. It is practically immune to the effects of perspiration, oils, sunlight and weathering; can be cleaned with soap and water; will not get hard or crack; will not bag or form wrinkles on deep spring soft seats, according to company claims.

Use Free Postcard For More Details.

#### P94. Electromatic Vulcanizer

A new electrically-heated vulcanizer for repairing synthetic or natural rubber tubes has been announced by the J. W. Speaker Corp., Milwaukee. Known as the Speaker



Electromatic, the device may be used for installing rubber-base replacement valves as well as patches of all sizes and shapes. An electric timing device may be set for any length of time up to 15 min. assuring

proper timing for all type of work. Automatic wing compensators assure right pressure for varying tube thicknesses.

Use Free Postcard For More Details.

#### P95. Fast Charger and Tester

A new fast charger with built-in tester has been introduced by the Willard Storage Battery Co., Cleveland. Perhaps most important of many advanced features is the automatic thermostatic control which effectively safeguards the battery under charge. A four-range scale, built into the device, provides automatic compensation for battery size and temperature, assuring accurate test results. A copper oxide rectifier is used and all parts are of unusually rugged construction.



Use Free Postcard For More Details.

#### P96. Glass Cleaner

Clearsite Laboratories, Pittsburgh, Pa., has developed three chemically treated cloths of slightly different characteristics for cleaning and fogproofing eyeglasses, goggles and windshields. All that is necessary to do is to wipe the inside of the glass to be treated with the proper Clearsite material.

Use Free Postcard For More Details.

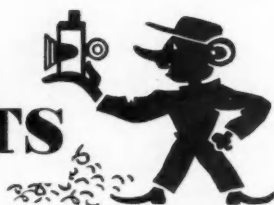
#### P97. Alignment Tool

Lynn Products Co., Chicago, has a new alignment tool for holding oil pans, radiator cores, fenders, etc., in place while being secured. Shaped like a screw driver but fitted with a pointed and threaded

(TURN TO NEXT PAGE, PLEASE)

**NEW**

# PRODUCTS



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(Continued from Page 57)

stud, it is screwed easily into the first hole with one hand, holds work in place while other studs are fitted. Available in two lengths and three diameters.

*Use Free Postcard For More Details.*

## P98. Automatic Fast Charger



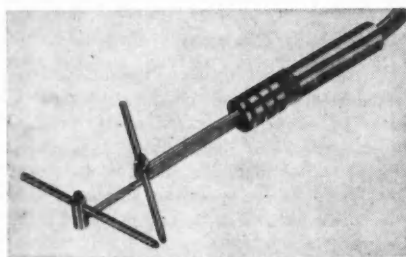
A new entirely automatic fast charger, has been announced by the Allen Electric and Equipment Co., Kalamazoo. No time clock or mechanical timing device is used. First the battery receives a six-minute freshening charge at high rate, and then is subjected to a one-

minute discharge and test to determine whether it is good or defective. If defective, the charger automatically shuts off; if good, the charger resumes charging for one-half hour at 100-amp. rate, then reduces and continues at 10-amp. Three signal lights indicate various stages and condition of battery.

*Use Free Postcard For More Details.*

## P99. Torch for AC-DC Welders

A Lite-ning Arc Torch for use with both AC and DC welders which produces a soft carbon arc flame is announced by Cesco Products, Inc., Chicago. This torch is



said to greatly widen the scope of electric welders permitting them to be used for many jobs that formerly required gas welders. It makes possible the welding of aluminum and virtually all ferrous and non-ferrous metals as well as brazing, soldering, preheating and hard surfacing.

*Use Free Postcard For More Details.*

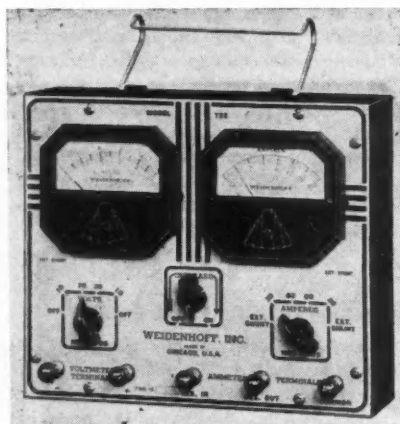
## P100. Heavy-duty Vulcanizer

A new heavy-duty model 300 electric vulcanizer for large tubes has been introduced by Rohne Electric Mfg. Co., Minneapolis. Features include all-aluminum construction, heating unit with two elements in upper plate, double thermostat and rubber cushion pad on lower plate.

*Use Free Postcard For More Details.*

## P101. Improved Circuit Tester

A new Weidenhoff Model C-725 circuit tester combines an ammeter calibrated 5-0-30 and 10-0-60 amp. (in 1 and 2 amp. divisions respectively), a voltmeter calibrated 0-10 and 0-20 volts (in .1 and .2



volt divisions respectively), and a heavy-duty vitreous-enameled  $\frac{1}{4}$  ohm rheostat. The unit permits quick tests and adjustment of passenger regulators and truck units within the voltage and current limits of the meters. Generator output may also be measured as well as current draw of electrical equipment or voltage drop across any switch or wire. Manufactured by Joseph Weidenhoff, Inc., Chicago.

*Use Free Postcard For More Details.*

## P102. Lighting Accessories

Grote Mfg. Co., Moorestown, N. J., has announced six new automotive lighting accessories with shatterproof lenses and engineered for heavy-duty use. The products consist of three types of combination stop and tail lights, a streamlined marker or fender light, an armored clearance light and a sealed-beam fog light.

*Use Free Postcard for More Details.*

## P103. Curved Windshield Wiper

A new windshield wiper blade designed to clean even the most complex curves now contemplated for windshields has been introduced by the Anderson Co., Gary, Ind. The special rubber blade is backed by a flexible steel strip which follows any curve



and the four-point suspension arrangement, shown in the illustration, still further increases the range of curvature.

*Use Free Postcard For More Details.*

## P104. 5-Lb. Fire Extinguisher

A new model fire extinguisher containing 5 lbs. of carbon dioxide in a light-weight cylinder is under production by Walter Kidde & Co., Inc., Belleville, N. J. The new portable replaces the old 4-lb. type, giving an extra pound of carbon dioxide while knocking  $2\frac{1}{2}$  lbs. off the average charged weight. The new 5 pounder weighs but  $15\frac{1}{2}$  lbs.



*Use Free Postcard For More Details.*

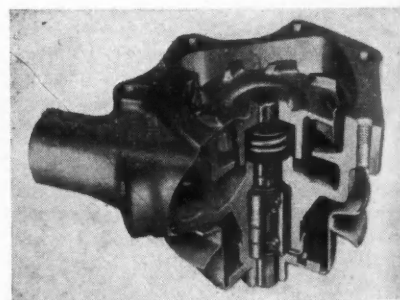
## P105. Liquid Masking Compound

Plask, a liquid plastic masking compound has been announced by The Servwell Products Co., Inc., Cleveland. The product is brushed on surfaces to be protected from paint spray and is said to dry ready for painting in about five minutes. After spraying, Plask may be peeled off in large sheets as shown in the accompanying illustration. The product works particularly well on glass or smooth metal surfaces including synthetic enamel finishes. It is not recommended for rubber or lacquer, in which case a border of masking tape is suggested.

*Use Free Postcard For More Details.*

## P106. Aluminum Water Pump

A new line of Permite rust-proof aluminum water pumps has been introduced by Aluminum Industries, Inc., Cincinnati.



Outstanding features include ball-bearing mounted impeller shaft; vacuum-tested, leak-proof operation; highly finished sealing surface; uniform, constant seal spring compression, and a 40 per cent saving in weight.

(TURN TO PAGE 152, PLEASE)



**Almost a Million Trucks . . . Nearly Half Are Mediums . . . '47 Output May Fill Backlog  
More Comfort for Drivers . . . Bridges Form Bottleneck . . . ICC Talks to Truck Makers**

### Almost a Million Trucks

Every thing considered, truck production was very satisfactory in 1946, despite all the headaches and troubles the manufacturers had with strikes, shortages, and government controls. Up to the first of December, the industry had turned out 839,069 trucks and with the coal strike settled before too much damage was done it is expected that the December production figure will total about 100,000. A conservative estimate would be 940,000 trucks for the year, which is far and away the best in history for strictly civilian output. Although the industry built a total of 1,042,085 trucks in 1941, 218,000 were for military usage. The best prewar truck year was 1937, when about 872,000 were built. Truck production at any event was far superior percentagewise to that made by the passenger car builders. Official production figures are expected to show between 2.1 and 2.2 million passenger cars in 1946, which is a pretty poor showing compared with 1941, when 3.755 million were made, despite restrictions on production in the late months of that year.

### Nearly Half Are Mediums

A look at the breakdown of truck production for the first 11 months of last year indicates that the percentage of medium weight trucks is much higher than before the war. Whereas in 1940, the medium classification (9000 to 16,000 lb. g.v.w.) accounted for 36.3 of the total year's production, in 1946 the 403,316 built in the first 11 months amounted to approximately 48.1 per cent. Percentages for the light and heavy categories for 1940 and 1946 respectively are as follows: Light (less than 9000 lb. g.v.w.) 47.1 and 44.5; heavy (16,001 lbs. and over) 16.6 and 7.4. It should be remembered, too, that the 1946 light truck classification included nearly 70,000 Willys Jeeps, which although classed as trucks, actually may be used for many other purposes, such as farm power, transportation of passengers, and other uses not normal to light trucks. When these are deducted, the total of light trucks of ½ ton or more capacity is considerably below the prewar level. Although the number of heavy trucks last year was only about half that built in 1940, the difficulty lay more in manufacturing troubles than in any desire to reduce the proportion of large vehicles.

**by LEN WESTRATE**  
CCJ Detroit News Editor

### '47 Output May Fill Backlog

The prospects for record truck production this year again are good, and the best estimates in the industry indicate a total of about 1.2 million units, barring any long serious disruption by strikes. In fact, one official says that the truck manufacturers will be very happy indeed if they can make and sell that many trucks. Despite all the talk of huge backlogs of orders, the private opinion of many truck sales managers is that they will be out actively selling trucks before the year is over. With prices as high as they are, operators are not going to trade as quickly as they otherwise might.

### More Comfort for Driver

Sometimes a hint of coming developments turns up in unexpected places. At a recent dinner held in Detroit to honor Charles Goins, Indianapolis truck driver who captured first place in the ATA-sponsored truck rodeo in Chicago in November, Jack Burke, Chevrolet commercial car and truck manager and host at the dinner, had something to say about driver comfort. He said that all manufacturers have paid too little attention to the comfort, safety, and convenience of the driver and that Chevrolet, at least, was going to do something about that in the future. Burke stated further that the man in the cab is the most important part of the trucking operation. The best maintained vehicle, he said, is worse than useless in the hands of an incompetent driver, because it then becomes a hazard to safety of life and property. A properly trained competent driver is a must for a safe, economical, and profitable operation, and because of the many regulations in effect today, truck driving has become a profession and not just a job, Burke added.

### Bridges Form Bottleneck

In a paper before the convention of American Association of Highway Officials, Prof. John S. Worley, of the University Engineering Department, stated that trucks and trailers with properly spaced multiple axles do not overload modern highways.

Research shows, he said, that a combination of vehicles with a series of axles placed 42 in. apart could have a gross load of over 300,000 lbs. without injury to the paved road surface, refuting the idea that vehicles in common use today overload the modern highway. He said that the real bottleneck today is bridges which have only about half the capacity of the highway. A nine-axle vehicle, for example, would have a gross weight of 152,000 lbs., which would not overload the highway, but at present the load limit is restricted by bridge strength to 72,000 lbs. A small additional cost—less than 3 per cent—would provide bridges with load strength approaching that of the highway itself, Prof. Worley stated.

### ICC Talks to Makers

ICC met with truck manufacturers in Detroit early this month to discuss several proposed revisions of the safety regulations. The commission always holds these discussions of proposed changes that will affect truck design with the builders as a proper first step in order to find out whether the proposed revisions are practical from a manufacturing standpoint. The talks are exploratory and in no way conclusive, since public hearings are held before any action is taken. One subject under discussion was push-out windows for truck cabs to provide quick escape in case of accident. Another was revision of specifications for fuel tanks. Also under consideration was the question of leaving brakes off front wheels of tractors. Western operators have made this request, saying that much better control is possible on hills when driving on snow and ice. Better hand brakes and sleeper cab specifications also were on the agenda. One change brought up for consideration is reported to have received a cold reception from the manufacturers. Apparently some passenger car user groups have asked for rear-end bumpers on trucks to protect automobiles. However, with rear frame height varying from a few inches above the ground to as high as 56 inches, the guards would not be of uniform height since a bumper to be any good would have to be mounted on the frame. As one spokesman said, the number of rear end collisions is very small, and invariably is caused by the motorist following too close and too fast.



## Trouble Shooting

# Spring Troubles



R. M. Schutz

**An automotive spring almost always gives ample warning of impending trouble.**

**This article and accompanying sketches give 24 checks that take only a few minutes**

**V** SPRINGS are perhaps the hardest working part of any automotive vehicle, and the most neglected because of their location. Usually they receive little or no attention until they have been so badly overworked and underserviced that they already are worn out when a road failure occurs; a failure that merely was the last straw that broke its back.

Breakdowns due to spring failures not only result in idle equipment, delayed transportation schedules and non-productive time for drivers and helpers, but also cause dissatisfied customers because of delayed shipments, deterioration and spoilage of cargo, piled up loading docks and, last but not least, an excessively expensive repair job because it has to be done far away from the fleet's normal spring service facilities.

Moreover, there is the safety fac-

tor. Parking a truck on a highway is always a hazard to the equipment, to the traffic on the road and to the personnel. Flares become extinguished through burning out or through being knocked off the road. Accidents are apt to occur to drivers walking back to the nearest garage for help. Their exposure to the elements may cause them illness, loss of time and unemployment payments, all of which add to the cost.

**24 Signs of Impending Trouble**  
**F**ORTUNATELY, a spring almost always gives ample warning of impending trouble. It rarely happens that a spring fails suddenly. A spring breaks down gradually, deteriorating

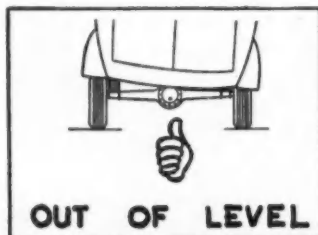
little by little, but at an accelerated pace when subjected to long usage, overloads or rough roads. This deterioration can be readily detected by its many warnings, shown in the 24 accompanying illustrations. These conditions apply to all automotive vehicles—cars, light trucks, heavy trucks, tractors, trailers or buses.

Every maintenance man should be thoroughly familiar with each of these 24 danger signals, and make the indicated checks an essential part of every PM inspection routine. This does not require 24 different operations or separate inspections. The inspector quickly can take in a great many of them at a glance, so that the

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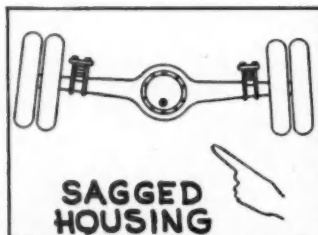
**by R. M. SCHUTZ**

Service Manager, Maremont Automotive Products, Inc.



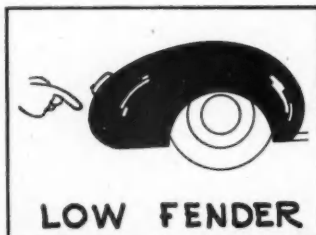
**OUT OF LEVEL**

**Fig. 1.** Low corner generally means broken or weak spring.



**SAGGED HOUSING**

**Fig. 2.** Sagging springs transfer weight to the housing.



**LOW FENDER**

**Fig. 3.** Low fenders indicate sag or broken springs.



**DAMAGED RUBBER BUMPER**

**Fig. 4.** "Striking through" indicates spring fatigue.

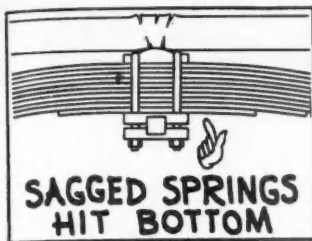


Fig. 5. The result of sagging springs striking frame.

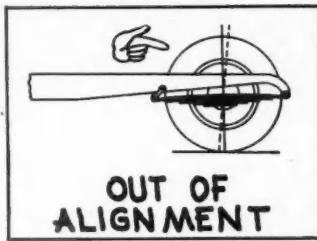


Fig. 6. Sagged springs cause front end wear and misalignment.

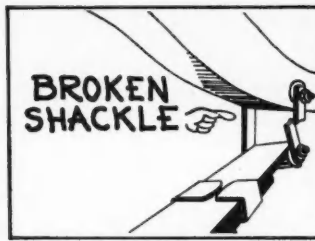


Fig. 7. If one side is broken, other is overloaded and breaks.

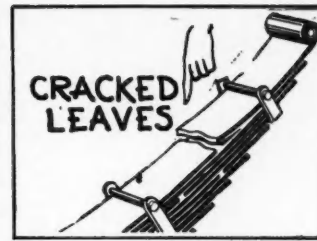


Fig. 8. A broken leaf weakens spring, hastens breakage.



Fig. 9. Rebound clips keep leaves in line, help absorb shocks.

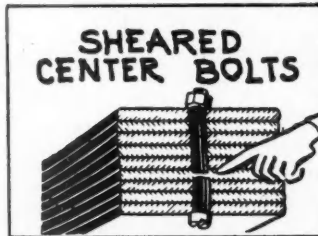


Fig. 10. Head of center bolt locates spring in the spring seat.

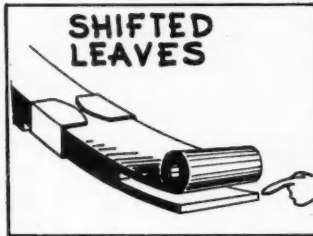


Fig. 11. Leaves shift when center bolt breaks, reducing capacity.



Fig. 12. Broken shifts permit shift of leaves, often cutting tires.



Fig. 13. Covered springs often have no rebound clips. They soon shift.

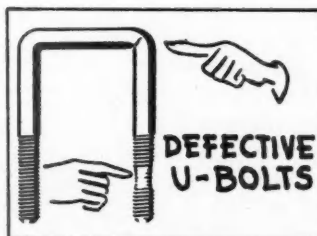


Fig. 14. When U-bolts fail, spring breakage usually follows.

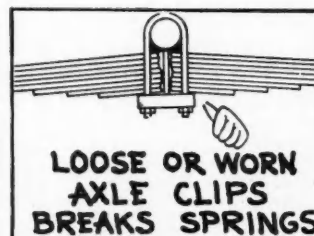


Fig. 15. Loose U-bolts concentrate bending stress, cause breakage.

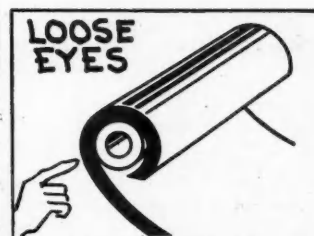


Fig. 16. Improper shackle fit causes rattles, knocks and failures.

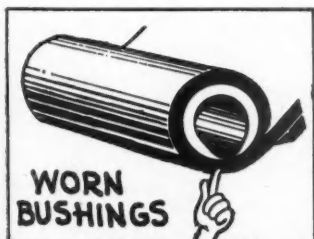


Fig. 17. Worn bushings are hidden by shackles; cause knocks, rattles.



Fig. 18. Ends of leaves "cut in," weaken spring by reducing thickness.

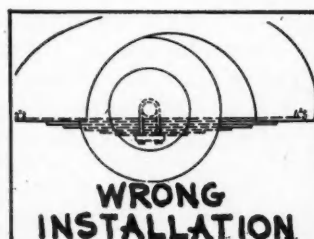


Fig. 19. Long end of spring goes to rear of certain models of vehicles.

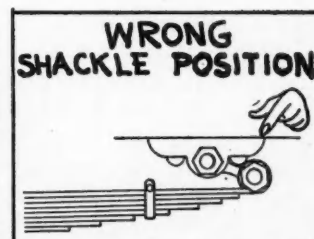


Fig. 20. When spring sags, it pushes loose shackle out of position.



Fig. 21. If helper touches brackets on empty truck, springs are weak.

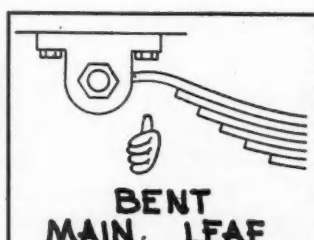


Fig. 22. "Frozen" shackle will seize eye and bend or break main leaf.

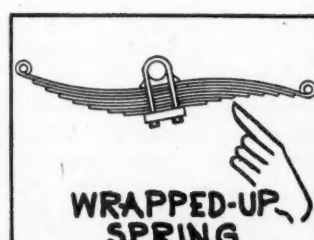


Fig. 23. Sudden starting and stopping twists axle, wears tires, etc.



Fig. 24. Shocks and springs work together, so replace defective units.



## CCJ and 83 Fleetmen

*Above. Part of the class of 83 fleetmen attending the IHC Triple Diamond Service School at Harrisburg, Pa.*

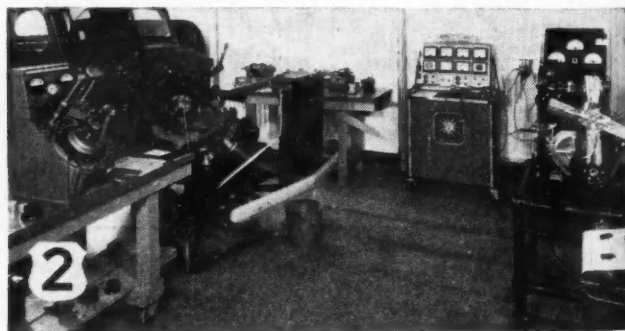
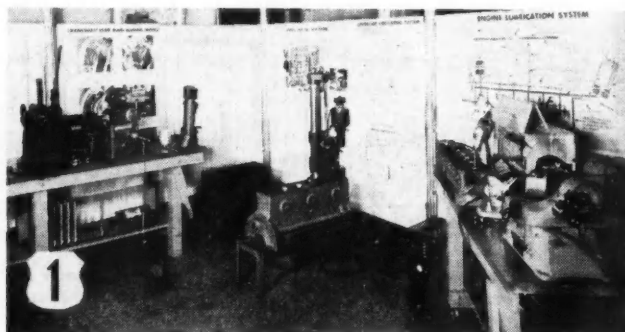
*Section I. The engine rebuilding department, where fleetmen practiced factory-approved service methods*

*Section II. The engine tune-up department, equipped with the most modern scientific tune-up instruments*

▼ COMMERCIAL CAR JOURNAL, in its follow-up of formalized mechanic training course for fleetmen, has sent me to school again. This time I was privileged to attend the Triple Diamond Service School held at the International branch at Harrisburg, Pa., on November 20 and 21. During this two-day period I was able to observe the new trend in formalized instruction methods developed by a progressive company to bring approved factory methods and scientific maintenance information to men in the using arm.

With 83 fleetmen representing as many as 60 truck fleets within a wide radius of Harrisburg, I attended classes in such phases of maintenance as engine tune-up, engine overhaul, carburetor and fuel pump maintenance, power train servicing and wheel alignment. I believe these 83 men will agree with my statement that this is one of the finest attempts at improving the efficiency of maintenance through instruction that has been attempted by manufacturers.

I was impressed with the wholesale acceptance of this type of service school by owners, shop foremen, mechanics as well as drivers. The interest showed by these men was a compliment to the fleet operators as well as to the skilled IHC instructors. The results of this and the other service schools carried out by International throughout the country will most certainly show up in improved maintenance and more economical maintenance of the fleets represented.



### Classes do the Work

INSTRUCTION, for the most part, followed practical lines, with the classes actually carrying out adjustments, completing tune-up operations and handling various instruments under the direct guidance of an instructor. The reaction of these old-time maintenance men was spontaneous. They realized that even skilled mechanics must keep abreast of new developments, and they took advan-

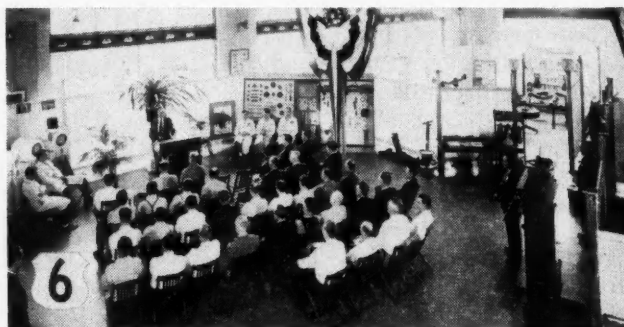
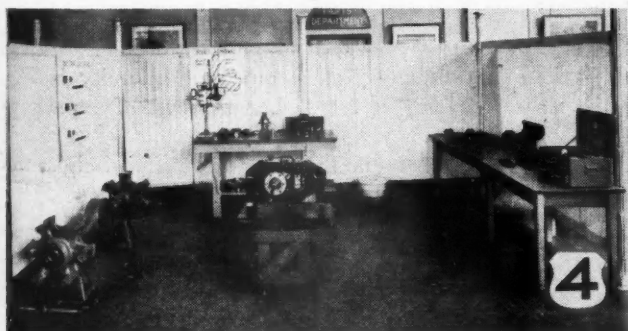
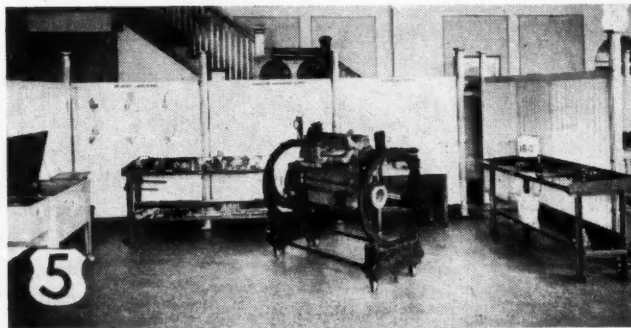


**Two-day session gives fleetmen thorough instruction and actual experience in scientific service procedures for economical, efficient truck maintenance**

**by M. K. SIMKINS**  
Technical Editor, Commercial Car Journal



## Attend **IHC Service School**



tage of the knowledge of skilled instructors who aided them in personal technical problems.

The instructors were service managers from various International Harvester branches throughout the division. They themselves had been trained intensively in each phase of maintenance through the company's school in Chicago. These men had received five weeks of training.

(TURN TO PAGE 132, PLEASE)

**Section III. Wheel alignment department, featuring proper tools and steps in securing precision adjustments**

**Section IV. Rear axle, transmission, differential service instruction was carried out in this department.**

**Section V. Carburetor, fuel pump repair section, where factory-approved repair methods were presented**

**Section VI. Instruction here covered efficient methods of parts requisitioning, control and storage**

# CCJ QUIZ

by **ROBERT F. BAHL**

Answers on Page 82



How well do you know the nationwide "averages" on truck operations? You can test yourself on these 10 CCJ Quiz Questions. All questions refer specifically to Class I for-hire motor carriers. (Class I carriers are those having an annual revenue of \$100,000 or more.) If you are average, you'll score 70 on this test. Don't be satisfied with the average, though. Aim for 100. Answers are on page 82.

1.

Which of these trips would come closest to representing the average haul of intercity motor carriers?

- a. New York to Pittsburgh
- b. New York to Baltimore
- c. New York to Chicago
- d. New York to Trenton, N. J.

2.

How many miles per gallon of fuel are you getting on your trucks? It's close to average if it is . . .

- a. about 3 m.p.g. c. about 8 m.p.g.
- b. about 5 m.p.g. d. about 12 m.p.g.

3.

Let's go from gas to oil. The same truck, to be average, would have to get about . . .

- a. 20 m.p.q. c. 83 m.p.q.
- b. 52 m.p.q. d. 141 m.p.q.

4.

If you haven't been right on any of the first three questions, the law of averages says you should be right

on this fourth one. Your truck is carrying an average load of general freight if the weight is . . .

- a. 3 tons c. 8 tons
- b. 5 tons d. 13 tons

5.

The average number of semi-trailers per tractor is greatest in . . .

- a. intercity service
- b. local service
- c. no appreciable difference

6.

Blank Transportation Co. operates 32 trucks. Since this is an "average" motor carrier, you would know that it would have on its payroll . . .

- a. 50 employees
- b. 100 employees
- c. 200 employees
- d. 320 employees.

7.

The average annual mileage per truck for Class I motor carriers would be the equivalent of . . .

- a. the circumference of the earth at the equator
- b. one fifth of the distance between the earth and the moon
- c. twenty times the distance from New York to San Francisco
- d. the distance between the North Pole and the South Pole

8.

This one will tax your estimating powers. The average taxes paid by motor carriers in 1943 for each power unit was more than . . .

- a. \$200 c. \$800
- b. \$400 d. \$1400

9.

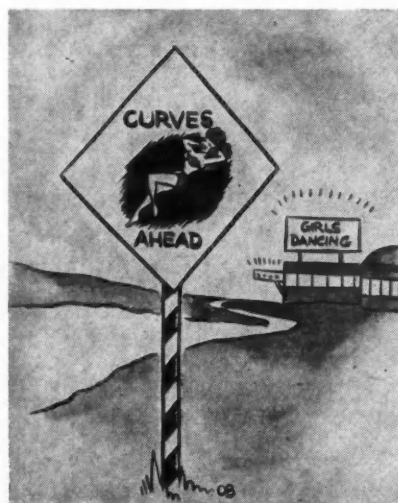
The average rate on hauling a ton of freight one mile intercity is . . .

- a. less than the cost of a package of chewing gum
- b. the price of a pack of cigarettes
- c. two-bits
- d. a dollar and a quarter

10.

The average wage per employee in the trucking industry as compared to the average wage in all private industry is . . .

- a. 10 per cent higher
- b. 26 per cent higher
- c. about the same
- d. 10 per cent less



★ SCORE CARD

|                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
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## One for Every Family...Every Day

**40-MILLION LOAVES OF BREAD...** fresh units of food energy... are baked and distributed every day. That's a golden loaf for every average-sized family in America. And this daily miracle...worked by farmers, millers and the baking industry... is so routine that it goes unnoticed until world conditions call dramatic attention to its remarkable efficiency.

It's another vital public service which motor trucks help an alert industry to perform. For every loaf of bread rides on trucks...usually, several times as grain on the farm, flour at the mill and, finally, the fresh loaf on your kitchen table.

Fresh delivery of split-penny profit products calls for de-

pendable, economical transportation. That's why White Super Power Trucks enjoy such preference among the leaders in the fields that have to have superlative distribution efficiency.

### THE WHITE MOTOR COMPANY

Cleveland, Ohio, U. S. A.  
THE WHITE MOTOR COMPANY  
OF CANADA, LIMITED  
Factory at Montreal

**White**

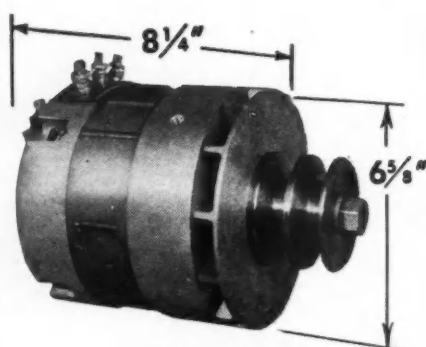
FOR MORE THAN 45 YEARS THE GREATEST NAME IN TRUCKS



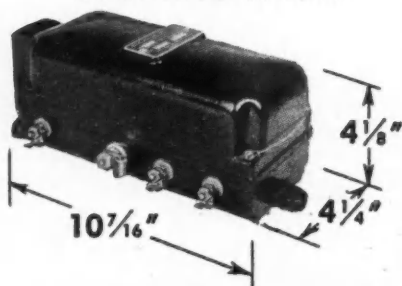
# 5

## IMPORTANT REASONS

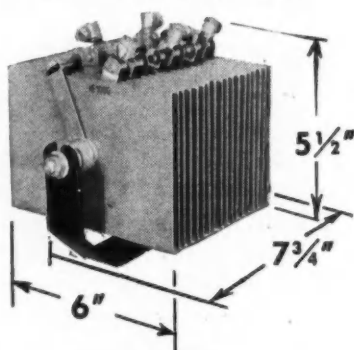
why it will pay you to investigate  
this new *high-output*  
**LEECE-NEVILLE GENERATING SYSTEM**



**ALTERNATOR**  
WEIGHT ..... 30 Pounds  
RATING .. 14 Volts—100 Amperes



**3-ELEMENT VOLTAGE REGULATOR**  
WEIGHT ..... 4 1/2 Pounds  
RATING .. 14 Volts—100 Amperes



**RECTIFIER**  
WEIGHT ..... 7 Pounds  
RATING .. 14 Volts—100 Amperes

① This 12-volt system gives you *higher* output at slow and fast speeds than D-C equipment—when correct drive ratio is provided 100 amperes can be produced at idle engine speed, as well as top engine speed. Here's generating that can save so much on battery maintenance, prolong battery life, permit addition of accessories without overloading.

② Alternator, voltage regulator and rectifier together weigh 60% less than generator-regulator combination of D-C system of comparable rating.

③ Alternator occupies less space than generator of conventional D-C system.

④ Simplicity of Alternator design (no commutator with commutating brushes, no rotating armature windings, no lubrication problem) means a long life of trouble-free service.

⑤ Rotation can be reversed without affecting system connections or performance and system can be used for series parallel circuits where 24-volt cranking is required.

If you require high output at low speeds, high speeds or both to keep batteries up, this new Leece-Neville 12-volt\* generating system should not only answer your problem, but pay for itself out of savings many times over. Installed on equipment on land or sea having radio, it holds the radio noise level to a minimum. Write today for further details. *The Leece-Neville Company, Cleveland 14, Ohio.*

\*Similar 3-unit system available for 6-volt service. Rating: 60 Amperes, 420 Watts. System Weight: 40 Pounds.

# LEECE-NEVILLE

**Pioneer and STILL Quality Leader**

CRANKING MOTORS • GENERATORS • VOLTAGE REGULATORS • SWITCHES



## New Diamond T Heavies

DIAMOND T Motor Car Company announces an improved series of Super-Service engines for all models from 1½-5 tons capacity, with an important increase in power and performance and nearly 10 per cent higher governed speed.

In most cases there is no change in physical dimensions, although for the 1½ ton model 306 and the 614H tractor model the new engines have slightly longer stroke and greater piston displacement. For the most part, however, the increased output is the product of developments and refinements in manifolding, valving and in explosion chamber design, including a measurable increase in compression ratio and efficiency with standard commercial grades of gasoline.

These changes are the product of an exhaustive program of research and experimental work, involving also more effective carburetion, distributor timing and cooling. For the special tractor models 509H and 614H, oversize engines are supplied, and a new intake system with air cleaner located outside the hood provides superior maintained performance, particularly on long high-speed runs and heavy grades.

### Power Increased 12-20%

THE increase in power is relatively uniform and extends throughout the entire series of medium and heavy-duty models, with output of the 1½-ton model 306 stepping up from 73 hp. to 82 hp., of the heavy-duty 1½-ton 404HH from 76 to 87 hp., the 509 from 81 to 93 hp., and the 614 H from 95 to 113 hp. Even greater increases are obtained in the oversize engines of the special tractor models.

It is reported that road performance of test models and of the first production in commercial service is even more impressive than the dynamometer tests, and also that these gains in power have been obtained without sacrifice of operating economy. Governed engine speed is now 200 r.p.m. higher for most models, with a proportionate increase in vehicle top speed, permitting faster schedules on inter-city hauls.



Diamond T special tractor models 509H and 614H have a new air intake system. An unusual feature is the location of cleaner outside the hood.

*Save COSTLY MAN HOURS! Speed REPAIR WORK!*

*Equip FOR SERVICE! Equip TO*

# CLEAN with STEAM

## SIEBRING

STEAM CLEANER

OPERATES Economically! Burns low cost commercial fuel oil or gas! Electric units also available!

### Makes QUICK WORK of Tough Cleaning Jobs! Cuts Grease and Grime in a Hurry!

A big asset in any repair shop or service station! A time and money-saver. ALSO A MONEY-MAKER! The Siebring PORTABLE Steam Cleaner provides instant steam, hot water or a combination of the two UNDER PRESSURE for fast cleaning on the toughest grease and dirt packed jobs. First it knocks loose, then it dissolves and quickly removes hardest packed dirt, grease and grime. Penetrates crevices and corners. Does a BETTER job in HALF THE TIME!

Operates independent of city water pressure or electricity!

Easily moved about!

## LOW COST, PORTABLE UNIT for CLEANING

- and WASHING AUTOMOBILES
- AUTO MOTORS
- MOTOR PARTS
- TRUCKS
- TRACTORS
- and OTHER TOUGH JOBS!

**10-DAY Free TRIAL OFFER!**

YOU RISK NOTHING! . . . Let us put this remarkable automatic steam cleaner in your shop for 10 DAYS' FREE TRIAL. See for yourself how simple it is to operate; how economical, safe and service free! Write for descriptive literature and details of our 10 Day "Free Trial" offer.

**SIEBRING MANUFACTURING COMPANY**  
501 MAIN ST., GEORGE, IOWA

**ROAD FAILURES** are a constant bugaboo of the average motor freight line because they cause a loss of valuable time and revenue that cannot be recovered.

When I went to work for our company 12 years ago, I made a study of the operation, extending over a period of about six years, to see if I could improve it so that road failures and other evils could be prevented. In 1940, we set up our present preventive maintenance system which has saved us approximately 30 per cent in time and money, and made it possible for our big fleet to lose only two work days where it formerly lost from 12 to 15.

Our firm was founded 22 years ago by A. C. Pierce of Medford, Ore., with only one truck and has grown steadily. Our 104 units now operate between Portland, Medford and California points, and we now transport an average of 170,000 tons 2,500,000 miles annually.

We check trucks at the end of every trip, and find that it takes approximately one hour per unit.

#### Blackboard Aids PM Control

**WE HAVE** big blackboards, at the left of the entrance of our shop in Portland, that contain spaces for brief notations of the various kinds of service that the likely to be necessary for the different units. One of them contains these instructions:

#### CITY PICKUP BOARD

1. Chassis should be lubed each 30 days.
2. Change of oil each 30 days.
3. Inspect brake systems each 60 days.
4. Check electrical systems completely each 30 days.



**by JACK C. AKERS**  
Fleet Superintendent, Pierce Auto Freight Lines, Portland, Ore.

| TRUCK NUMBER | CHASSIS LUBE | OIL CHANGE | INSPECT BRAKE | ELECTRIC SYSTEM | COMPLETE INSPECT | STEERING | MOTOR TUNEUP | REPACK WHEEL BEARS | STEAM CLEAN | CHASSIS OVERHAUL | COMPLETE | MISC. |
|--------------|--------------|------------|---------------|-----------------|------------------|----------|--------------|--------------------|-------------|------------------|----------|-------|
| 3            | 10-16        | 10-16      | 10-16         | 10-16           | 10-16            | 10-16    | 10-16        | 9-6                | 10-16       | 10-16            | 10-16    | 10-16 |
| 8            | 9-23         | 9-23       | 9-23          | 9-23            | 9-23             | 9-23     | 9-23         | 9-23               | 9-23        | 9-23             | 9-23     | 9-23  |
| 9            | 10-7         | 10-7       | 10-7          | 10-7            | 10-7             | 10-7     | 10-7         | 8-16               | 10-16       | 10-16            | 10-16    | 10-16 |
| 13           | 10-17        | 10-17      | 10-17         | 10-17           | 10-17            | 10-17    | 10-17        | 9-23               | 9-23        | 9-23             | 9-23     | 9-23  |
| 16           | 10-21        | 10-21      | 10-21         | 10-21           | 10-21            | 10-21    | 10-21        | 10-17              | 10-17       | 10-17            | 10-17    | 10-17 |
| 17           | 10-16        | 10-16      | 10-16         | 10-16           | 10-16            | 10-16    | 10-16        | 9-7                | 9-7         | 9-7              | 9-7      | 9-7   |
| 19           | 10-16        | 10-16      | 10-16         | 10-16           | 10-16            | 10-16    | 10-16        | 10-16              | 10-16       | 10-16            | 10-16    | 10-16 |
| 28           | 9-23         | 9-23       | 9-23          | 9-23            | 9-23             | 9-23     | 9-23         | 9-23               | 9-23        | 9-23             | 9-23     | 9-23  |
| 29           | 9-23         | 9-23       | 9-23          | 9-23            | 9-23             | 9-23     | 9-23         | 9-23               | 9-23        | 9-23             | 9-23     | 9-23  |
| 37           | 10-10        | 10-10      | 10-10         | 10-10           | 10-10            | 10-10    | 10-10        | 10-10              | 10-10       | 10-10            | 10-10    | 10-10 |
| 3            | 10-10        | 10-10      | 10-10         | 10-10           | 10-10            | 10-10    | 10-10        | 10-10              | 10-10       | 10-10            | 10-10    | 10-10 |
| 4            | 10-16        | 10-16      | 10-16         | 10-16           | 10-16            | 10-16    | 10-16        | 10-16              | 10-16       | 10-16            | 10-16    | 10-16 |
| 60           | 10-17        | 10-17      | 10-17         | 10-17           | 10-17            | 10-17    | 10-17        | 9-23               | 9-23        | 9-23             | 9-23     | 9-23  |

*City Pickup Board, a large blackboard located at the shop entrance to the shop, lists the dates and service due on individual trucks*

## 10-Point PM

**Cuts Costs 30%**



**Unusual system embraces A to J services,**

**thoroughly performed at set intervals,**

**plus trip checks and control forms.**

**Fleet work day loss cut from 15 to two**

5. Inspect steering system each 30 days.
6. Tune up motor each 30 days.
7. Repack wheels and bearings every 90 days.
8. Steam clean equipment every 60 days.

9. Give units a complete overhaul every two years.

This blackboard, shown at Fig. 1, is located next to the board containing our main line truck service record. It is one of the big factors in the success of our PM program.



2

2

In the case of our trailers, the blackboard has spaces for their numbers, makes, axles, brake blocks, numbers and sizes.

**WE HAVE** a driver's trip report, Figs. 3 and 3A, on green cardboard 9x5½ in. in size. It is so detailed that it is possible for us to compile every fact that we need in making our records of each driver's daily activities. We have found it invaluable in keeping track of our trucks.

**A**NOTHER form, Fig. 4 and 4A, that has been very helpful to us is our Round Trip Unit Inspection Report, 4 $\frac{3}{4}$ x10 in., popularly known as a "cry sheet." Printed on heavy white paper, it contains all kinds of services likely to be needed, as well as the necessary equipment.

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③

3a

On our blackboard for road equipment, Fig. 2, there are spaces for the following detailed information to be made with a crayon about the operation of our company's Mainline Truck service: Truck... Mileage... Date... Valves and Injector... Piston... Crank Shaft... Crank Shaft Size... Motor Change Date... Clutch... Unit Transmission... Midship Transmis-

# 10-Point PM . . .

(Continued from Page 69)

by the driver at the beginning of each run. Each connecting driver must verify notations by the previous driver and indicate any exceptions. On the back of this card are spaces for the numbers of the drivers, the towns and miles covered, the fuel and oil added and the various items that usually need checking as well as the

printed names of the towns and cities at which the checking is usually done on the North and South runs. There also are spaces for notations for necessary repairs and the signatures of our inspectors and drivers.

When these foregoing forms are filled out, we have the basis for a very thorough knowledge of the hap-

penings during each trip to enter into our records.

## 10-Point PM Program

WE HAVE one of the most complete PM systems on the Pacific Coast. It is organized into 10 divisions, listed under the various letters of the alphabet ranging from A through J. Five men are employed to inspect the company's equipment under my supervision in our Portland Shop.

SERVICE A is performed each time that one of our trucks is in our Portland or Medford shops. Our A Inspection Work Sheet, 8½x11 in., is shown at Fig. 5, requires a lubrication, check and inspection of such basic items as air brakes, electric equipment, steering mechanism, etc.

SERVICE B is performed on our trailers each time they are in our Portland Shop. The details that are to be checked are listed on a work sheet shown at Fig. 6. This service is designed to catch possible troubles with marker lights, tail lights, stop lights, reflectors, wheel lugs, spare tires, lubrication of fifth wheels, and so on.

SERVICE C is performed every 600 miles and includes complete lubrication of the following parts: Universals, driveshafts, hanger bearings, hand brake hanger, torque arms, spring saddles, clutches, steering gears, spring pins, steering spindles and fans.

SERVICE D, to be performed at 1500 miles or less, requires a change of engine oil and filter element.

SERVICE E, at 10,000 miles, includes the checking of the generator and regulators, the tightening of all body bolts and the checking of the front wheel alignments.

(TURN TO PAGE 72, PLEASE)

**PIERCE AUTO FREIGHT LINES**  
**Round Trip Unit Inspection Report**

Driver Date: 1. 2. 3. 4.  
Truck or Trailer No. 35 Semi or Trailer No.

The following items have been inspected on Units shown, prior to leaving Terminal or Garage and are O. K. and Serviceable.

| ITEMS                           | INSPECTION | 1 | 2 | 3 | 4 |
|---------------------------------|------------|---|---|---|---|
| Head Lights Burning—Clean       |            |   |   |   |   |
| Marker Lights Burning—Clean     |            |   |   |   |   |
| Tail Lights Burning—Clean       |            |   |   |   |   |
| Side Clear Lights Burning—Clean |            |   |   |   |   |
| Stop Light Working—Clean        |            |   |   |   |   |
| Brakes, Foot                    |            |   |   |   |   |
| Brakes, Emergency               |            |   |   |   |   |
| Rear View Mirrors               |            |   |   |   |   |
| Visual Studs                    |            |   |   |   |   |
| Tire Inflation                  |            |   |   |   |   |
| Spare Tire                      |            |   |   |   |   |
| Windshield Wiper                |            |   |   |   |   |
| Radiator Full                   |            |   |   |   |   |
| Fuel Tanks Full                 |            |   |   |   |   |
| Reflector Clean                 |            |   |   |   |   |
| Steering Gear                   |            |   |   |   |   |
| Trailer Coupler                 |            |   |   |   |   |

The following equipment was in my possession in Serviceable Condition at Time of Departure.

| ITEMS                          | INSPECTION | 1 | 2 | 3 | 4 |
|--------------------------------|------------|---|---|---|---|
| Flange—3                       |            |   |   |   |   |
| Red Flange—3                   |            |   |   |   |   |
| Railway 10 Minute Red Flange—4 |            |   |   |   |   |
| All Sizes Spare Light Bulbs    |            |   |   |   |   |
| Fire Extinguisher, filled      |            |   |   |   |   |
| Toot Kit                       |            |   |   |   |   |
| Jack                           |            |   |   |   |   |
| Full Oil Can                   |            |   |   |   |   |
| Tire Tools                     |            |   |   |   |   |
| Camera                         |            |   |   |   |   |

Sign Below After Inspection on Above

DRIVER: *Morgan*  
INSPECTION: *Morgan*

This Card must be Signed by Driver at the beginning of each Run, each Connecting Driver verifying notations by previous Driver and noting any exceptions on reverse side. No exceptions taken—Equipment accepted as in Good Condition. When Run is completed turn into Shop.

| DRIVERS | FROM STATION | TO STATION | MILES | FUEL | OIL QTY. |
|---------|--------------|------------|-------|------|----------|
| No. 1   | East         | Long       | 122   | 0    | 0        |
| No. 2   | Long         | Port       | 122   | 0    | 0        |
| No. 3   |              |            |       |      |          |
| No. 4   |              |            |       |      |          |

ROAD CHECK: Hitch—(Steering Apparatus)—Check Oil—Tires  
Brakes—Wheel Studs—Lights—Clean Reflectors

|             | SOUTH BOUND | NORTH BOUND | SOUTH BOUND   | NORTH BOUND |
|-------------|-------------|-------------|---------------|-------------|
| PORTLAND    | ✓           | ✓           | MEDFORD       |             |
| SALEM       | ✓           | ✓           | STATE LINE    |             |
| ALBANY      | ✓           | ✓           | Mt. SHASTA    |             |
| EUGENE      | ✓           | ✓           | REDDING       |             |
| DRAIN       |             |             | ORLAND        |             |
| ROSBURG     |             |             | ARBUCKLE      |             |
| WOLF CREEK  |             |             | VACAVILLE     |             |
| GRANTS PASS |             |             | SAN FRANCISCO |             |

NECESSARY REPAIRS AND COMMENTS  
Driver No. 1: *Headlight Wiper B.O.*  
*Morgan*

Driver No. 2

Driver No. 3

Driver No. 4

Below. Loading Sheet, 11 x 18½ in., gives accurate information on loading and unloading operations

**Portland LIST OF EQUIPMENT LOADED** Date: *5/31/46*

| Truck & Trailer | Destination | Driver  | Way Points   | Loaded Wt. | Misc. Remarks         |
|-----------------|-------------|---------|--------------|------------|-----------------------|
| Trk. No. 40     | Medford     | Brasell |              | 26800      |                       |
| Trk. No. 68     | Medford     |         |              | 34000      | Load 5000 at Salem -  |
| Trk. No. 70     | Medford     | A       | H-I-Bell     | 27000      | No Stops              |
| Trk. No. 65     | Eugene      | WJ      | Trailer Drop | 32000      | Loaded for Medford    |
| Trk. No. 40     | Grants Pass | Rosa    |              | 26600      | Cable on Rear Trailer |
| Trk. No. 30     | Grants Pass | Fall    |              | 35000      | Watch Curves -        |

Work Order, 8½ x 11 in., is used for inspections prior to entering the repair department

**PIERCE AUTO FREIGHT LINES, INC.**  
**WORK ORDER**

Unit No. *I 35* Date *July 29, 1946*

Please Fix Fire Extinguishers.

*Jack Ayers*



## You take the inside track to outsize savings with a rugged, reliable Studebaker truck

**YOU** definitely short-cut your route to lower hauling costs, if your loads are rolling in a Studebaker.

That's clearly shown on the books of hundreds of operators who have switched from other trucks to trustworthy, dollar-saving Studebakers.

Moving mountains of cargo, or making spot deliveries, you can count on a soundly built, brilliantly engineered Studebaker truck to pay off in superior payload performance.

### Engineered to hold down upkeep

That husky, heavy-duty-model Studebaker truck you see pictured above is the broad-shouldered leader of a remarkable postwar line of transport vehicles that also includes Studebaker's one-ton and half-ton pick-up models.

These Studebakers are full-fledged team-mates in structural soundness of more than 200,000 heavy-duty Studebaker military trucks and lightweight Weasel cargo carriers that

served with distinction during the war.

This Studebaker stamina means exceptionally low maintenance cost—and, you enjoy substantial gasoline and oil savings, thanks to intensive, continuous technical research in Studebaker's great scientific laboratories and on its 800-acre, million-dollar proving ground.

### Outstanding in craftsmanship

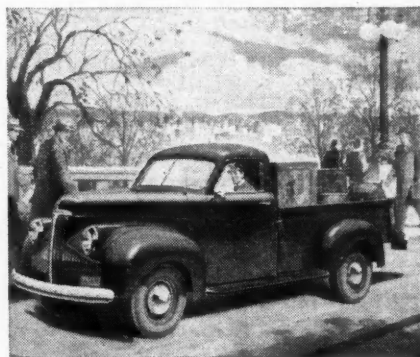
Today, as always, Studebaker trucks are built by painstaking master craftsmen. Many are members of unique Studebaker father-and-son teams.

Right now, many more firms and individuals than ever are in the market for new Studebaker trucks—so be sure to lose no time in talking over your new-truck requirements with your nearby Studebaker dealer.

## STUDEBAKER

**Builder of trucks you can trust**

©1947, The Studebaker Corp'n, South Bend 27, Indiana, U.S.A.



Here's Studebaker's famous half-ton Coupe Express pick-up—It's a Studebaker quality vehicle in every detail. Its power plant is the sturdy Studebaker Econ-o-miser engine used in the wartime Weasel—and the same engine also powers Studebaker's popular one-ton pick-up. Studebaker's heavy-duty-model truck is available in several wheelbases. It's smoothly, economically powered by Studebaker's fine Hy-Mileage engine.



# 10-Point PM . . .

(Continued from Page 70)

SERVICE F, to be performed at 10,000 miles, includes the cleaning and checking of valves and the checking and replacement of the air hose and fittings.

SERVICE G, at 25,000 miles, requires a check of wheels, a change of generators, change of the voltage regulator, change of grease in the transmission, change of grease in the differential, installation of clean injectors, repacking of wheels and inspection of bearings.

SERVICE H, to be performed at 50,000 miles, requires the checking of the cylinder block and piston lines on the trucks, change of midship transmission, change of starter, change of foot valve, change of spindle bushings for necessary replacements and air compression and differential.

SERVICE I, to be performed at 100,000 miles or within not longer than 10 months, includes a motor change, overhaul of steering gear, rebushing of front axle, changing of the unit transmission, changing of cross bearings, changing of dual reduction differential, replacement of electric wiring and changing of the trailer hitch as well as the heater hose.

SERVICE J is given all trailers at 25,000 miles and includes the repacking and inspection of wheel bearings.

We use a simple white work order, 8½x11 in., Fig. 7, for our instructions to the repair department.

We also have a loading sheet, 11x18½ in., Fig. 8, printed on newspaper stock, which gives us accurate information about the equipment that is loaded or unloaded.

In our mechanical department, we assemble our own equipment and have three standard engines which are interchangeable with the other engines of our fleet. As the result of this system and other preventive maintenance measures our fleet seldom loses any time through road failures.

Upper right. A Inspection Work Sheet. Five men cover these items at Portland and Medford. Right. Service B inspections pulled on trailers at Portland

## SERVICE A

### PIERCE AUTO FREIGHT LINES, INC. Preventive Maintenance Service and Inspection Work Sheet For All Line Units

#### PORTLAND SHOP

Vehicle No. .... Truck ..... Trailer ..... Date .....

All items listed hereon must be checked each time unit is in Portland.

1—Read driver's trip report for necessary repairs

#### LUBRICATION

- 2—Differentials
- 3—Transmission
- 4—Main midship transmission
- 5—Fan pulley
- 6—Motor

#### GENERAL INSPECTION

- 7—Check transmission and differentials for leaks
- 8—Wheel grease retainers
- 9—Cylinder head gaskets
- 10—Exhaust gaskets tight
- 11—Motor for oil leaks
- 12—Fuel line leaks
- 13—Cooling system leaks
- 14—Motor running condition (include replacement of any bad valves)
- 15—Fan pulley assembly
- 16—Oil pressure
- 17—Tachometer
- 18—Fuel pressure
- 19—Fan belt
- 20—Hose connection & cooling system

#### AIR BRAKES INSPECTION (See Note)

- 21—Drain air tanks
- 22—Emergency brake
- 23—Condition of brake lining

#### ELECTRIC EQUIPMENT

- 24—Generator charging rate
- 25—Marker light
- 26—Reflectors

#### ELECTRIC EQUIPMENT (Cont'd)

- 27—Headlights
- 28—Spotlights
- 29—Dashlights
- 30—Taillights
- 31—Stoplights
- 32—Fill batteries

#### STEERING MECHANISM

- 33—Check thoroughly

#### CHASSIS

- 34—Check for cracked frame
- 35—Broken springs
- 36—Tighten U-bolts
- 37—Check for cracked wheels
- 38—Wheel lugs—inside studs (check with wrench)

#### MISCELLANEOUS

- 39—Swipe
- 40—Defroster
- 41—Horns
- 42—Signal arm
- 43—Rear view mirror
- 44—Heaters

#### ACCESSORIES

(Following have been checked and are complete)

- 45—Jack
- 46—Jack handle
- 47—Fire extinguisher (full)
- 48—3 Reflectors
- 49—Tire wrench

#### ACCESSORIES (Cont'd)

- 50—Shovel (winter months)
- 51—Spare fuses
- 52—Three 10-minute fuses
- 53—All sizes spare light bulbs
- 54—Spare fan belt
- 55—Spare axle
- 56—Three red flags
- 57—Skid chains (winter months)
- 58—Sanders filled (winter months)
- 59—Notation as to any damage to chassis or bodies, no matter how minor
- 60—Tires—air pressure

All items hereon have been checked by me personally and found in good order, except those which have been checked and notations made covering same.

#### MECHANIC

No attempt is made to describe necessary lubrication and repairs to be made, but each item listed must be either inspected, repaired, lubricated, or in place, in a manner consistent with efficient preventive maintenance.

If items are not in working condition or are missing, please list the number of each respective item below, stating briefly the reason why same could not be placed in working order or supplied. If not sufficient room on this sheet, attach one.

This work sheet is to be made up and signed at the time the work is completed on the unit. Same is to be filed on a board in the shop and retained until authority is given to remove.

5

## SERVICE B

### Pierce Auto Freight Lines, Inc.

#### PORTLAND SHOP

All items listed hereon must be checked each time unit is in Portland.

Trailer No. .... Date .....

- 1—Check for air leaks
- 2—Brake lining
- 3—Plugs
- 4—Marker lights
- 5—Tail lights
- 6—Stop lights
- 7—Reflectors
- 8—Wheel lugs
- 9—Glad hand rubbers
- 10—Chuck block
- 11—Spare tire
- 12—Lubricate fifth wheel
- 13—Tongue
- 14—Safety chains
- 15—Air hose condition
- 16—Spare tire on rack
- 17—Lubricate all spring shackles
- 18—Brake cams

All items hereon have been checked by me personally and found to be in good order except those which have been checked and notations made covering same, on the reverse side of this sheet.

#### MECHANIC

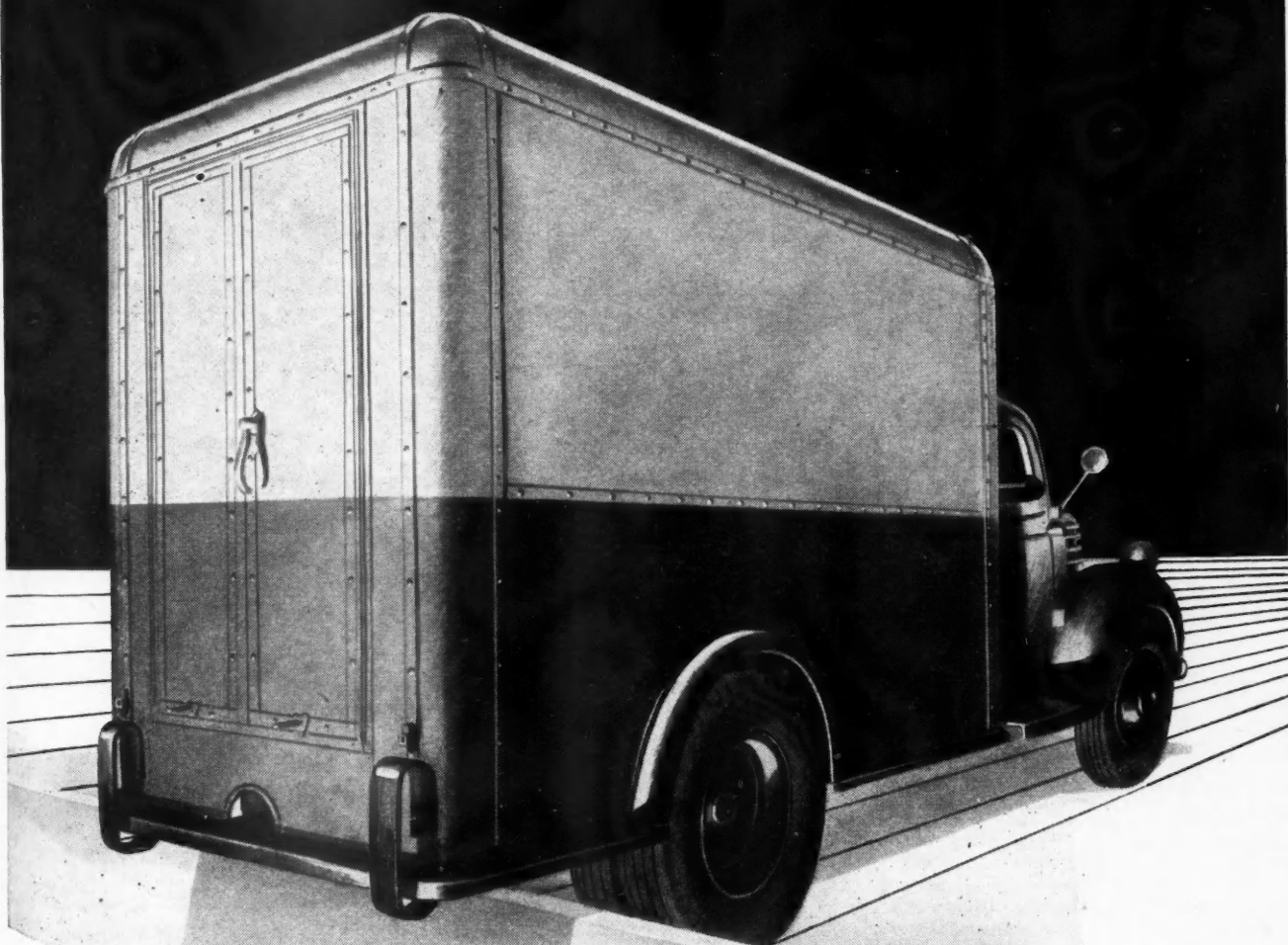
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This work sheet is to be made up and signed at the same time the work is completed on the unit. Same is to be filed on a board in the shop and retained until authority is given to remove.

# A LINDSAY BODY

## Last Word in Low-cost Transportation



\*



There are

**192**

"LS Jims" to serve you

**Ls Jim**  
Your Guarantee of  
Nearby Friendly Service

The Lindsay Corporation  
1724 25th Ave., Melrose Park, Ill.  
Sales Offices: Chicago, New York,  
Atlanta, San Francisco, Montreal.

Durability—Compactness—Strength—Speed of Delivery—Ease of Repair—Interchangeable Parts—form a Nationwide Service.

In terms of your truck operations, these advantages mean three things to you:

1. Maximum Payload—always.
2. Maximum Load Protection—always.
3. Minimum Lay-up Time—when repairs are necessary.

To assure you of these values, the leading body builder in your area has become an Ls Jim—a Lindsay Body Builder. He meets your exact requirements—gives you the advantage of Ls mass production—and joins with 192 other leading builders to give you nationwide service.

# LINDSAY

**LS STRUCTURE**

U. S. Patents 2017629, 2263510, 2263511  
U. S. and Foreign Patents and Patents Pending

**DISTRIBUTORS AND BUILDERS IN ALL PARTS OF THE COUNTRY**

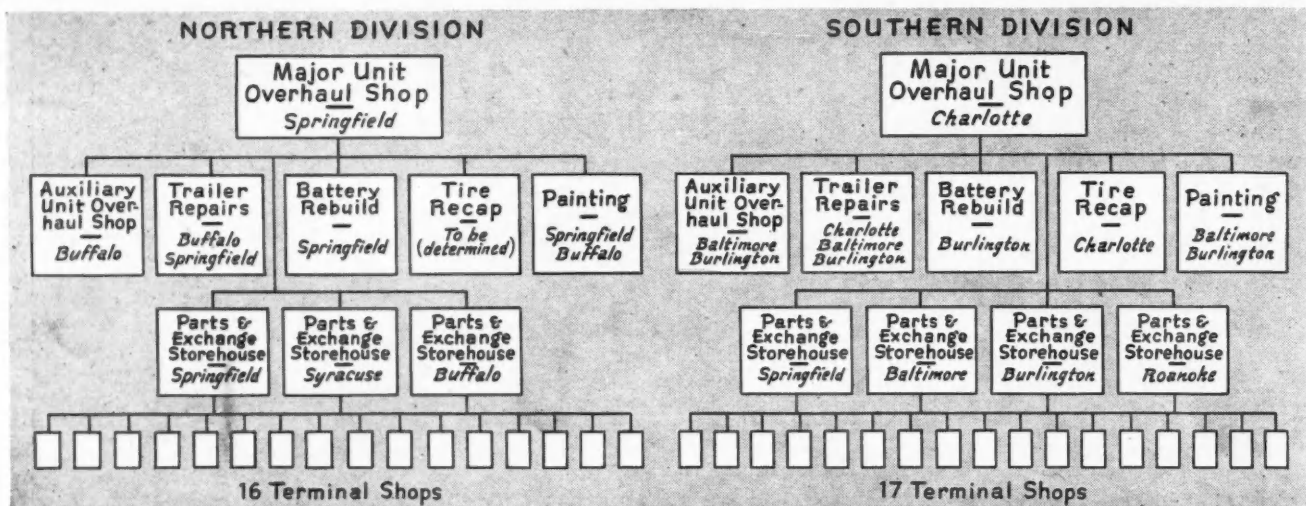


Table A. Associated's major and specialized overhaul facilities are spotted for maximum efficiency. Each terminal shop knows where to go for what it needs



by **D. V. GEARWAR**

General Supt. of Maintenance  
Associated Transport, Inc.

# Maintenance

## Coordinates the Facilities

It was in July, 1941, that CCJ first carried the news that Associated Transport, Inc., was in the making. It was to be a merger of seven large Eastern firms including Horton of Charlotte, Consolidated of Hartford, Barnwell of Burlington, N. C., McCarthy of Taunton, Mass., M. Moran of Buffalo, Southwestern of Bristol, Va., and Transportation Inc. of Atlanta. It took two years to complete the deal and another three to iron out expected "associating pains." But out of the confusion has come unity and with it one of the country's largest trucking enterprises.

In this article, Mr. Gearwar tells how the corporation's 33 terminal shops and numerous specialized depots were coordinated into a closely knit maintenance team. In subsequent articles he will discuss the specialized problems of preventive maintenance, major overhaul and tire control.

As a preface to the opinions and procedures outlined in the following series, I should like to make it clear that the steps taken and current procedures are but stages to be elaborated on and rounded out as our standardized maintenance policy

reaches by personnel training a peak considered sufficiently advanced to rephrase procedure and practices.

Equipment characteristics, shop facilities, tool and machine equipment, personnel, terrain, schedules and loads all have a bearing on the type and flexibility required in establishing a maintenance policy and procedure and the following represents no panacea or cure-all for all types of over the road operations but applies specifically to the property of the Associated Transport, Inc.

Our fleet consists of 1186 trucks and tractors (predominantly the latter), 1506 trailers, and 105 pieces of other equipment. The vehicles roll four and a quarter million miles a month and are sprawled across a giant, irregular rectangle roughly 1600 miles long and 400 miles wide. Then just for good measure in our own case, shuffle in the fact that the fleet is made up of the association of seven major lines, all of them accustomed to handling maintenance in their own

particular way—some good, some not so good, all different.

### 4-Point Objective

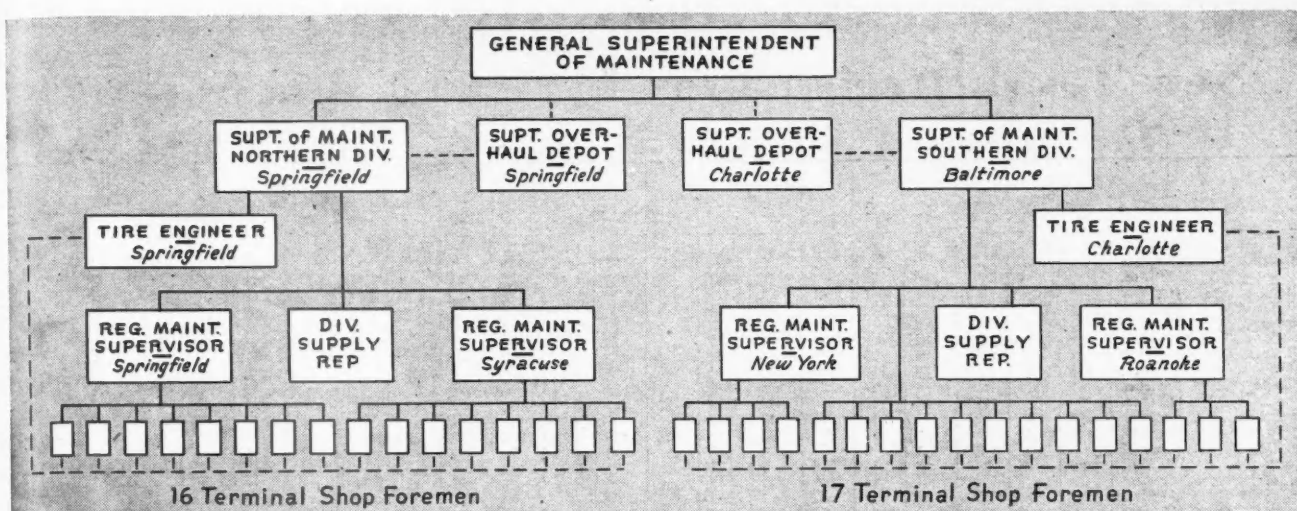
AS WE saw it the job called primarily for:

1. Standardization of maintenance policies throughout the system with maximum emphasis on unit replacement;
2. Establishment of specialized shops for overhaul of major and minor units, trailer repairs, painting and tire recapping;
3. Standardization of complete trucks and component parts to the greatest possible degree, and
4. Establishment of an accurate centralized control system involving a minimum of overhead.

We accomplished the first major objective by setting up seven types of standardized inspection plans. These inspections, and we use the term liberally, consist of:

1. A daily "fast line" check covering all safety equipment and general





**Table B. Delegation of responsibilities to key personnel makes centralized maintenance control possible. Personnel chart, above, shows where each man stands**

## Control of Giant Fleet

roadability of the complete tractor-trailer train.

2. A "slow line" adjustment and repair system to handle minor faults detected in the "fast line" inspection.

3. Lubrication at 1200- to 1500-mile intervals.

4. An "A" inspection at 3000- to 4000-mile intervals, depending on type of equipment. This includes oil change, tune-up and adjustments.

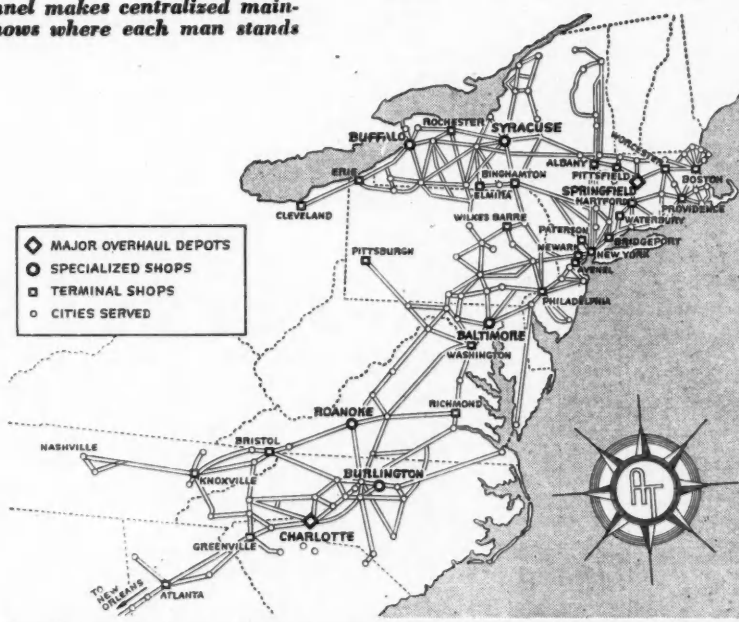
5. A "B" inspection at 18,000 to 20,000 miles which consists of a complete power-train check-up.

6. A "C" inspection at 48,000 miles which includes disassembly and changeover if needed of all major and minor unit assemblies.

7. An unusually complete trailer inspection at three-month intervals.

Full details of these inspection procedures as they are accomplished at a typical Associated Transport terminal will be the subject of a later article.

How the second major objective was finally resolved—the establishment (TURN TO PAGE 140, PLEASE)



***Shops of all description (see legend) blanket Associated's territory  
Below: Typical of newest equipment is this Brown tractor and trailer***



**2797-vehicle scattered fleet employs**

**standardization of vehicles and maintenance,**

**has established specialized repair shops,**

**and centralized control over all facilities**

# New Truck Registration by Makes and States\*

|                |         | Auto-car | Brock-way | Chev-ro et | Dia-mond T | Divco | Dodge | Federal | Ford | FWD | GMC  | Hud-son | Inter-national | Mack | Ply-mouth | Reo | Ster-ling | Stude-baker | White | Willys | All Others | Total  |
|----------------|---------|----------|-----------|------------|------------|-------|-------|---------|------|-----|------|---------|----------------|------|-----------|-----|-----------|-------------|-------|--------|------------|--------|
| Alabama        | October |          |           | 628        | 9          |       | 213   | 5       | 529  |     | 85   | 5       | 267            | 1    |           | 53  |           | 53          | 13    | 103    | 3          | 1,965  |
|                | 10 Mos. | 19       | 1         | 3101       | 50         | 27    | 1574  | 70      | 2261 |     | 296  | 31      | 1505           | 91   | 1         | 258 |           | 262         | 139   | 628    | 63         | 10,366 |
| Arizona        | October |          |           | 799        | 6          | 1     | 41    | 1       | 117  |     | 12   |         | 45             |      |           | 5   |           | 23          | 27    |        | 2          | 452    |
|                | 10 Mos. | 7        |           | 799        | 6          | 12    | 366   | 16      | 639  |     | 56   | 8       | 293            | 16   |           | 50  |           | 95          | 32    | 263    | 29         | 2,688  |
| Arkansas       | October |          |           | 579        | 5          |       | 91    | 2       | 472  |     | 77   |         | 171            |      |           | 11  |           | 25          | 6     |        | 1          | 1,510  |
|                | 10 Mos. | 2        |           | 2962       | 32         |       | 1203  | 30      | 3052 |     | 315  | 11      | 1091           | 24   |           | 42  |           | 177         | 39    | 373    | 3          | 9,356  |
| California     | October | 26       | 7         | 1486       | 20         | 20    | 597   | 20      | 963  | 4   | 390  | 16      | 494            | 1    |           | 64  | 10        | 321         | 72    | 447    | 37         | 4,937  |
|                | 10 Mos. | 328      | 41        | 6903       | 139        | 199   | 5194  | 137     | 6994 | 40  | 1505 | 186     | 3421           | 118  | 1         | 402 | 108       | 1840        | 451   | 3870   | 450        | 31,327 |
| Colorado       | October |          |           | 120        | 4          | 11    | 39    |         | 105  |     | 12   |         | 37             |      |           | 6   |           | 10          | 1     |        |            | 355    |
|                | 10 Mos. | 26       |           | 1155       | 42         | 31    | 684   | 16      | 1171 | 30  | 144  | 9       | 590            | 7    |           | 49  |           | 138         | 57    | 198    | 3          | 4,291  |
| Connecticut    | October |          |           | 223        | 10         | 13    | 93    | 15      | 182  |     | 19   | 1       | 123            | 1    |           | 14  | 5         | 27          | 26    | 80     | 3          | 888    |
|                | 10 Mos. | 140      | 65        | 1174       | 39         | 57    | 777   | 68      | 715  | 12  | 135  | 30      | 563            | 63   |           | 76  | 13        | 199         | 135   | 470    | 26         | 4,757  |
| Delaware       | October |          |           | 90         | 1          | 2     | 27    | 1       | 55   |     | 13   | 1       | 33             |      |           | 2   |           | 5           | 5     | 7      |            | 246    |
|                | 10 Mos. | 30       | 6         | 397        | 7          | 15    | 233   | 1       | 281  |     | 72   | 6       | 174            | 8    |           | 19  |           | 86          | 23    | 83     | 7          | 1,448  |
| Dist. of Col.  | October |          |           | 75         |            | 18    | 31    | 1       | 89   |     | 20   | 1       | 45             | 1    |           | 17  |           | 10          | 8     | 15     |            | 331    |
|                | 10 Mos. | 15       | 28        | 385        | 13         | 60    | 237   | 9       | 309  |     | 62   | 9       | 226            | 8    |           | 93  |           | 53          | 50    | 102    | 7          | 1,666  |
| Florida        | October |          |           | 514        | 3          |       | 251   | 12      | 490  | 2   | 63   | 7       | 192            | 3    |           | 22  |           | 95          | 13    | 133    | 2          | 1,812  |
|                | 10 Mos. | 84       | 5         | 2384       | 43         | 26    | 1674  | 67      | 2799 | 8   | 399  | 31      | 1090           | 240  | 1         | 173 |           | 320         | 125   | 704    | 22         | 10,185 |
| Georgia        | October |          |           | 494        | 3          | 6     | 204   | 3       | 492  |     | 54   | 2       | 144            | 2    | 2         | 20  |           | 44          | 31    | 51     |            | 1,567  |
|                | 10 Mos. | 9        |           | 3302       | 48         | 16    | 1690  | 48      | 3307 |     | 312  | 26      | 1268           | 105  | 3         | 168 |           | 401         | 186   | 531    | 37         | 11,437 |
| Idaho          | October |          |           | 242        | 4          |       | 32    | 5       | 142  |     | 25   |         | 84             |      |           | 10  |           | 44          |       | 26     |            | 615    |
|                | 10 Mos. | 6        |           | 907        | 22         | 8     | 444   | 29      | 858  |     | 115  | 8       | 391            | 8    |           | 47  |           | 167         | 5     | 149    | 37         | 3,002  |
| Illinois       | October |          |           | 1720       | 59         | 35    | 401   | 17      | 779  |     | 198  | 9       | 535            | 9    |           | 84  |           | 194         | 60    | 455    | 14         | 4,067  |
|                | 10 Mos. | 128      | 16        | 6457       | 409        | 257   | 4599  | 149     | 4809 | 7   | 1000 | 167     | 4377           | 167  |           | 564 | 6         | 1195        | 449   | 1726   | 173        | 26,687 |
| Indiana        | October |          |           | 488        | 15         | 6     | 169   | 9       | 299  |     | 62   | 4       | 305            |      |           | 29  |           | 141         | 61    | 86     | 3          | 1,689  |
|                | 10 Mos. | 16       | 131       | 3345       | 116        | 93    | 2218  | 89      | 2263 | 1   | 520  | 79      | 2252           | 21   |           | 298 |           | 1037        | 225   | 971    | 29         | 13,704 |
| Iowa           | October |          |           | 674        | 17         | 6     | 204   | 3       | 420  |     | 46   | 1       | 253            |      |           | 36  |           | 62          | 10    | 192    |            | 1,855  |
|                | 10 Mos. | 8        | 3         | 3416       | 132        | 31    | 1807  | 70      | 2151 | 3   | 319  | 46      | 1793           | 68   |           | 239 |           | 446         | 62    | 715    | 11         | 11,119 |
| Kansas         | October |          |           | 573        | 19         |       | 78    | 4       | 284  |     | 57   |         | 219            |      |           | 20  |           | 63          | 6     | 61     | 3          | 1,353  |
|                | 10 Mos. | 6        |           | 3280       | 92         | 14    | 1148  | 50      | 1972 | 5   | 230  | 31      | 1559           | 21   |           | 117 |           | 400         | 85    | 579    | 40         | 9,660  |
| Kentucky       | October |          |           | 477        | 11         | 4     | 160   | 2       | 272  | 1   | 40   |         | 164            | 1    |           | 26  |           | 30          | 14    | 92     |            | 1,294  |
|                | 10 Mos. | 6        | 2         | 2874       | 59         | 24    | 1339  | 53      | 1888 | 2   | 326  | 24      | 1385           | 18   |           | 207 |           | 251         | 75    | 656    | 2          | 9,171  |
| Louisiana      | October |          |           | 420        | 8          |       | 145   | 5       | 493  |     | 44   |         | 143            | 3    |           | 24  |           | 52          | 12    | 24     |            | 1,384  |
|                | 10 Mos. | 25       |           | 2392       | 54         | 2     | 1149  | 40      | 2084 | 2   | 199  | 14      | 1013           | 50   |           | 107 |           | 307         | 80    | 490    | 10         | 8,026  |
| Maine          | October |          |           | 190        |            |       | 61    |         | 144  |     | 1    |         | 81             |      |           | 4   | 2         | 20          | 2     | 35     | 1          | 564    |
|                | 10 Mos. | 2        | 12        | 1199       |            | 25    | 666   | 29      | 874  |     | 159  | 17      | 536            | 36   |           | 26  | 8         | 153         | 21    | 263    | 42         | 4,080  |
| Maryland       | October |          |           | 7          | 6          |       | 103   | 5       | 202  |     | 44   |         | 140            |      |           | 30  | 1         | 19          | 27    | 56     |            | 846    |
|                | 10 Mos. | 87       | 75        | 2009       | 29         | 79    | 1015  | 63      | 986  |     | 376  | 23      | 674            | 58   |           | 171 | 1         | 210         | 129   | 512    | 29         | 6,685  |
| Massachusetts  | October |          |           | 406        | 10         | 18    | 164   | 11      | 273  |     | 63   | 8       | 197            | 6    |           | 36  | 10        | 64          | 23    | 192    | 13         | 1,568  |
|                | 10 Mos. | 378      | 198       | 2565       | 92         | 270   | 1953  | 78      | 2131 | 13  | 347  | 73      | 1403           | 178  |           | 289 | 50        | 454         | 292   | 732    | 63         | 11,555 |
| Michigan       | October |          |           |            |            |       |       |         |      |     |      |         |                |      |           |     |           |             |       |        |            |        |
|                | 10 Mos. |          |           |            |            |       |       |         |      |     |      |         |                |      |           |     |           |             |       |        |            |        |
| Minnesota      | October |          |           | 539        | 23         | 16    | 147   | 11      | 369  |     | 73   | 8       | 233            |      |           | 15  |           | 41          | 18    | 57     | 1          | 1,550  |
|                | 10 Mos. | 31       | 2         | 2909       | 95         | 58    | 1828  | 82      | 2599 | 18  | 412  | 44      | 1811           | 84   |           | 130 |           | 436         | 134   | 593    | 55         | 11,321 |
| Mississippi    | October |          |           | 971        | 28         |       | 223   | 15      | 796  |     | 123  | 1       | 353            | 22   | 1         | 37  |           | 59          | 36    | 68     | 4          | 2,735  |
|                | 10 Mos. | 3        |           | 3177       | 54         | 4     | 1343  | 41      | 2647 |     | 315  | 9       | 1155           | 53   | 3         | 103 |           | 229         | 83    | 426    | 16         | 9,661  |
| Missouri       | October |          |           | 987        | 16         | 2     | 254   | 11      | 623  |     | 199  | 1       | 346            | 2    |           | 20  |           | 69          | 23    | 141    |            | 2,624  |
|                | 10 Mos. | 5        | 1         | 5685       | 128        | 129   | 2800  | 101     | 3738 |     | 563  | 48      | 2131           | 26   |           | 181 |           | 564         | 147   | 1977   | 110        | 17,362 |
| Montana        | October |          |           | 216        | 6          |       | 53    |         | 105  |     | 25   | 2       | 78             | 1    |           | 2   |           | 31          | 2     | 49     | 4          | 573    |
|                | 10 Mos. | 10       |           | 1111       | 23         | 1     | 557   | 4       | 597  | 3   | 124  | 9       | 562            | 3    | 1         | 19  | 1         | 212         | 27    | 230    | 45         | 3,539  |
| Nebraska       | October |          |           | 301        | 11         | 1     | 83    | 3       | 209  | 2   | 29   | 3       | 166            |      |           | 15  |           | 30          | 37    | 45     | 3          | 938    |
|                | 10 Mos. | 2        | 1         | 1775       | 106        | 11    | 931   | 37      | 1303 | 30  | 200  | 15      | 1199           | 35   |           | 74  |           | 231         | 129   | 445    | 17         | 6,541  |
| Nevada         | October |          |           | 1          |            |       | 14    |         | 25   |     | 10   | 1       | 16             |      |           | 1   |           | 9           |       | 5      |            | 104    |
|                | 10 Mos. | 4        | 1         | 202        | 3          | 4     | 207   | 7       | 206  | 1   | 47   | 2       | 123            | 4    |           | 2   | 5         | 58          | 5     | 84     | 19         | 993    |
| New Hampshire  | October |          |           | 89         | 2          |       | 30    | 3       | 51   |     | 8    |         | 37             | 1    |           | 3   |           | 2           | 1     | 21     |            | 253    |
|                | 10 Mos. | 10       | 6         | 426        | 4          | 9     | 242   | 10      | 295  | 1   | 47   | 4       | 192            | 17   |           | 36  |           | 23          | 7     | 109    | 2          | 1,430  |
| New Jersey     | October |          |           | 358        | 7          | 8     | 140   | 7       | 344  |     | 73   | 10      | 177            | 1    | 3         | 8   |           | 40          | 23    | 119    | 7          | 1,369  |
|                | 10 Mos. | 324      | 349       | 2713       | 104        | 150   | 1943  | 157     | 2455 | 7   | 613  | 95      | 1597           | 295  | 3         | 147 | 9         | 507         | 315   | 1195   | 72         | 13,039 |
| New Mexico     | October |          |           | 139        |            |       | 56    |         | 115  |     | 29   |         | 45             |      |           | 6   |           | 14          | 2     | 11     |            | 420    |
|                | 10 Mos. | 1        |           | 797        | 21         | 2     | 431   | 17      | 443  | 4   | 194  | 3       | 275            | 21   |           | 21  |           | 77          | 33    | 53     | 9          | 2,332  |
| New York       | October |          |           | 1151       | 30         | 25    | 559   | 21      | 1015 | 10  | 236  | 15      | 444            | 15   |           | 80  | 4         | 157         | 59    | 324    | 31         | 4,373  |
|                | 10 Mos. | 767      | 1305      | 7262       | 552        | 271   | 5978  | 426     | 5873 | 79  | 1697 | 156     | 3695           | 1144 | 3         | 574 | 51        | 1230        | 921   | 2504   | 392        | 34,802 |
| North Carolina | October |          |           | 673        | 13         | 1     | 174   | 13      | 527  |     | 47   | 2       | 198            |      |           | 49  |           | 78          | 10    | 132    | 6          | 1,900  |
|                | 10 Mos. | 78       | 5         | 3308       | 44         | 28    | 1692  | 89      | 2397 |     | 172  | 36      | 1099           | 160  |           | 200 |           | 470         | 155   | 726    | 119        | 10,749 |
| North Dakota   | October |          |           | 119        | 3          |       | 38    | 2       | 99   |     | 11   |         | 91             |      |           | 2   |           | 26          |       | 34     |            | 428    |
|                | 10 Mos. |          |           | 693        | 22         | 5     | 433   | 6       | 663  | 4   | 62   | 7       | 673            | 8    |           | 39  |           | 158         | 16    | 226    | 2          | 3,079  |
| Ohio           | October |          |           | 953        | 29         | 45    | 456   | 21      | 678  |     | 139  | 12      | 601            | 1    |           | 62  |           | 105         | 192   | 325    | 8          | 3,634  |
|                | 10 Mos. | 157      | 51        | 5856       | 236        | 267   | 4458  | 304     | 4296 | 27  | 841  | 156     | 3913           | 177  |           | 595 |           | 1330        | 783   | 2082   | 118        | 25,345 |
| Oklahoma       | October |          |           | 499        | 4          | 3     | 128   | 3       | 434  | 1   | 45   | 1       | 144            | 1    |           | 16  |           | 57          | 4     | 66     |            | 1,407  |
|                | 10 Mos. | 10       |           | 2935       | 19         | 43    | 1864  | 34      | 2446 | 16  | 294  | 24      | 1316           | 24   |           | 122 |           | 276         | 101   | 507    | 15         | 9,615  |
| Oregon         | October |          |           | 380        | 38         | 10    | 190   | 22      | 315  |     | 3    | 95      | 7              | 174  | 4         |     |           | 89          | 13    | 91     | 15         | 1,471  |
|                | 10 Mos. | 11       | 1         | 1830       | 87         | 28    | 1019  | 75      | 1260 |     | 271  | 27      | 771            | 56   |           | 89  | 16        | 328         | 93    | 425    | 57         | 6,163  |
| Pennsylvania   | October |          |           | 1103       | 45         | 29    | 584   | 37      | 979  |     | 245  | 16      | 694            | 4    |           | 120 | 6         | 196         | 82    | 299    | 19         | 4,597  |
|                | 10 Mos. | 490      | 538       | 6383       | 275        | 112   | 5511  | 308     | 4530 | 5   | 1113 | 145     | 4172           | 416  |           | 696 | 90        | 1464        | 715   | 1905   | 145        | 29,013 |
| Rhode Island   | October |          |           | 107        | 5          |       | 35    |         | 46   |     | 14   |         | 47             |      |           | 5   |           | 11          |       | 25     |            | 320    |
|                | 10 Mos. | 130      | 4         | 563        | 19         | 53    | 360   | 5       | 336  |     | 49   | 13      | 280            | 13   |           | 11  | 11        | 69          | 31    | 162    | 9          | 2,089  |
| South Carolina | October |          |           | 293        | 3          | 4     | 72    | 1       | 236  |     | 43   |         | 68             |      |           | 23  |           | 42          | 12    | 42     | 10         |        |

# The Fate of a Fleet is in This Flask

Hundreds of Fleets Depend on advice

FROM

**VALVOLINE FLEET LABORATORY SERVICE**

A sample of crankcase drainings from one of your units holds secrets which affect the efficiency and life of your fleet. But, in our laboratory, we read these secrets like a book—evaluate them in the light of your particular operating conditions—translate them for you, into practical suggestions. Hundreds of fleets are using this service to step up efficiency and reduce operating cost.

## **VALVOLINE FLEET CONTROL LABORATORY SERVICE**

Ask the Valvoline man how this service can be obtained **FREE**

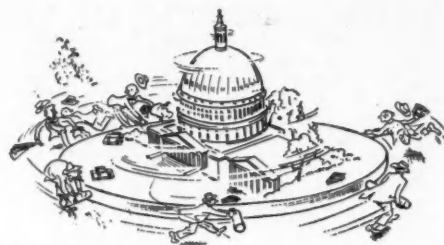
Wire or Write your nearest branch  
**FREEDOM-VALVOLINE OIL COMPANY**  
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New York - Washington - Toronto - Pittsburgh - Atlanta  
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Refineries at Butler and Freedom, Pa.





# WASHINGTON RUNAROUND



**ICC to Review Safety Rules . . . Front Wheel Brakes on Pan . . . Crash-proof Gas Tanks Studied  
November Truck Output Off 9% . . . Trailer Production High . . . Rail Increase to Aid Trucks**

## ICC to Review Safety Rules

Following through on the work that has been done on the revision of the Motor Carrier Safety Regulations, the Interstate Commerce Commission in mid-December instituted a formal proceeding ordering the Director of the Bureau of Motor Carriers to prepare a proposed revision of parts 1 to 7 of the regulations.

At the same time, the Commission directed that persons desiring to recommend changes in the present safety regulations by means of modification of particular rules or the incorporation of new rules, should submit such recommendations in writing to the Bureau of Motor Carriers on or before Feb. 1.

Before public hearings are held on the proposed changes the Bureau will hold informal conferences with all interested parties, including Federal and State agencies, technical societies and associations. Other investigations and tests will also be undertaken.

Parts 1 to 7, which will undergo revision, cover the following subjects: qualification of drivers; driving of motor vehicles, parts and accessories necessary for safe operation; reporting of accidents; hours of service drivers; inspection and maintenance; and transportation of explosives and other dangerous articles.

## Front-Wheel Brakes on Pan

During the past month, the problem of using front-wheel brakes on large units in the 11 western states was also brought to a head. The ICC reports that during the war the rule requiring front-wheel brakes was almost universally disregarded by western operators with respect to units having more than two axles. Because of war conditions these violations were also disregarded. However, the renewed emphasis on the part of the Commission to force compliance with the regulations brought about a realization on the part of western operators that something had to be done. Accordingly, the Oregon Motor Truck Association has asked the Commission to modify the rule with respect to front-wheel brakes on three-axle trucks, trucks attached to full trailers, and tractors attached to semi-trailers. Abrogation of the rule pending the overall revision of the regulations was requested. Similar peti-

**by GENE HARDY**  
CCJ Washington Bureau

tions are expected from the other western states.

The ICC is likely to go along with the request, in regard to certain types of vehicles, but it will not be as broad as the exemption requested by the Oregon group. However, it will be some time before a final decision is reached, since considerable experimentation is expected to be necessary. While action would be based on the western situation, any easing of the front-wheel brake requirements would apply to trucks throughout the country.

## Crash-Proof Tanks Studied

The Commission is also interested in a new type gas tank, developed as a result of wartime research. This tank combines rubber and nylon, encased in metal, to provide a practically crash-proof container, according to current claims. Still to be proven is its resistance to bursting on exposure to fire. The Commission has been studying the various types of tanks for many years and some change in specifications will undoubtedly be embodied in the revised regulations.

## Most War Powers to Fold

With the remaining functions of CPA, OPA, and OWMR now in the hands of the Offices of Temporary Controls for eventual liquidation, the end of the wartime regulatory agencies is in sight. The Wage Stabilization Board officially expires on Feb. 24. CPA's powers will expire on March 31, with the end of the Second War Powers Act. Other wartime nuisances, such as the heavy excise taxes, will be acted upon speedily by the new Congress. While some of CPA's orders will go out of the window before March 31, others will remain until the end. One of these is the order limiting exports of trucks and automobiles. Other commodities on which controls might be retained are tin, rubber and some building products.

## Initial Lea Report Soon

A limited number of copies of the first progress report of the House Interstate Commerce Committee's work on the investigation of the transportation system will be available by mid-January. This report is a compilation of a cross-section of the replies to the committee's questionnaire from various transportation interests prepared by the committee analyst, Dr. John Frederick. Dr. Frederick has also included a brief statement encompassing his summary and conclusions. A forward by former Chairman Clarence Lea will round out the report. The conclusions are expected to be non-controversial—merely setting forth Dr. Frederick's views on the material received by the Committee.

## Justice Dept. Delays Suits

The Department of Justice has put off any new anti-trust suits against carriers for joint-rate making, pending action on two suits now before the courts. Justice action was necessary, due to the expiration on October 1 of Certificate 44, which deferred such prosecutions during the war years.

## November Truck Output Off 9%

Truck output during November dropped 9401 units from the October all-time high to a total of 100,552. The decrease was due to the short November work month. December production will also be affected by a decrease in working days, due to lost time in the early part of the month as a result of the coal strike and Christmas absenteeism. This has resulted in a downward revision of the industry's forecast for December to 113,874 units.

Attainment of the December forecast will result in production for 1946 of about 2000 units greater than CCJ's prediction of 950,000.

November production equaled 92.45 per cent of the industry forecast and the decrease affected all categories as shown in the following tabulation:

|                       | Forecast | Production | %     |
|-----------------------|----------|------------|-------|
| Light . . . . .       | 44,634   | 41,993     | 94.08 |
| Medium . . . . .      | 52,578   | 50,158     | 95.40 |
| Light-Heavy . . . . . | 8,322    | 6,260      | 75.23 |
| Heavy-Heavy . . . . . | 3,231    | 2,141      | 66.26 |
| Total . . . . .       | 108,765  | 100,552    | 92.45 |

(TURN TO PAGE 232, PLEASE)

# It's here...the **FRUEHAUF "FLYER"!**

**HAULS MORE . . .  
GETS AROUND FAST!**

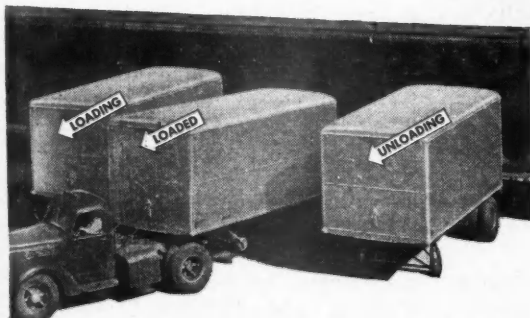
Built Expressly for  
City Pick-Up and Delivery

Fruehauf "Flyers" are now rolling off the production line! Built especially for city delivery work, they bring you the very hauling equipment you'll need for speed, flexibility and maximum economy. These 18 ft. Vans save money—in the initial investment—in upkeep—in lower depreciation and by doubling the loads your trucks can haul.

**Lowest Price Tag on Any Van  
in the FRUEHAUF Line . . .  
but Built with Top-Quality  
Aerovan Construction Features!**

## ONE TRUCK HANDLES SEVERAL TRAILERS

Full efficiency of the Trailer principle is achieved where Trailers are left standing for loading and unloading, while the truck is constantly on the road pulling first one then another Van.



**GET THE TRAILER STORY  
BEFORE YOU BUY A TRUCK!**

World's Largest Builders of Truck-Trailers

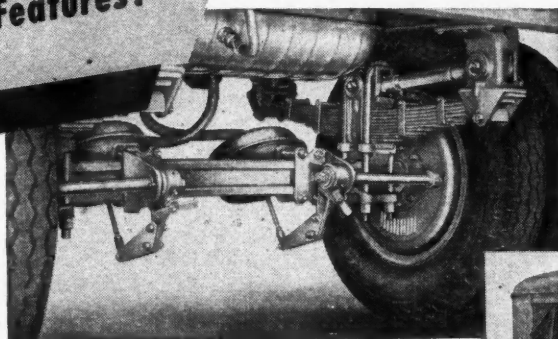
**FRUEHAUF TRAILER CO. • DETROIT 32**

9 Factories — 62 Factory Service Branches

**FRUEHAUF Trailers**



Up narrow alleys, in and out of congested loading places and through busy city streets, the Fruehauf "Flyer" hauls big loads and gets around fast. Couple it to a light-duty truck and haul as much as 8-tons with ease. Turns in the same radius as the truck which pulls it.



## AEROVAN-TYPE INTEGRAL FRAME CONSTRUCTION

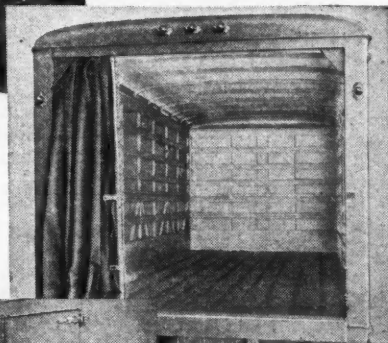
Extra strength—yet light in weight. The body and chassis are one. Floor has steel hat-sections with hardwood floor boards between these longitudinal ribs. Wood baseboards and steel strips line this roomy Van.

## CURB-SIDE DOOR

Standard all-metal door permits parallel parking with curb for store-door delivery.

## PROGRESSIVE RATE SPRING SUSPENSION

An exceptionally sturdy under-construction — I-beam chrome molybdenum steel axle — latest spring suspension which progresses in ratio to load applied. Adjustable rubber-mounted radius rod . . . and brakes with an extra safety factor.



## WEATHER-PROOF EXPRESS GATE

Rear woven steel gate is covered with heavy weather-proof duck.

FOR TRUCKS AND TRAILERS

**FRUEHAUF  
ELEVATING ENDGATES**

Lift and Lower Loads  
Up to 1-TON  
the Hydraulic Way!

Send for Free Booklet  
"FRUEHAUF  
ELEVATING ENDGATE"

**"ENGINEERED TRANSPORTATION"**





## Bonus Plans

(CONTINUED FROM PAGE 35)

5. First loyalty bonus payment to a new employee will be paid at the end of the period in which he qualifies.

Bonuses were established with the thought that our employees would stay on the job after we had spent a considerable time in teaching them our methods of operation.

## Accident Frequency Decreased

THESE bonuses have been in effect since Nov. 1, 1943, and since the inauguration of our bonus plans our accident frequency has steadily decreased.

We are of the opinion that our bonuses have been one of the largest contributing factors in our overall good driving practices on the highway. The establishment of bonus plans is very controversial in that a great number of operators feel there

should be no additional payment for a man to do his job well. However, we feel our men are entitled to additional pay if we can lower our insurance cost, and thereby increase our efficiency.

## Other Factors in Program

WHILE our no-accident mileage bonus is an important factor in our safety program, there are other factors that we find are necessary to insure our overall safe driving objectives. For example, we carefully screen each applicant, picking our men for their personality and attitude. If he is not an accomplished driver, we then train him by using as an instructor a driver. The instructor stays with the new man until the instructor feels he is ready to report as a driver. At that time, I personally check the man, and if he is found to be satisfactory, he reports to the dispatcher for assignment. As a follow up, we repeatedly check all of our men at various times, and if mistakes are being made we issue corrective methods. This results in a closer bond between employer and employee, which is one of the fundamentals of good labor-management relations.

We have what we call an accident screening board, composed of three drivers, who must have at least a one-year no-accident record prior to their appointment on the board. This board is changed every three months as this will allow each driver the opportunity to assess discipline on his fellow drivers, if necessary. We have found this plan to be very satisfactory in that it instills in each employee the pride that comes from a job well done.

Safety instructions pertaining to the operation of our equipment, such as speed, courtesy, and other safety measures, are handled personally by myself with individual letters and personal contact with each employee. This takes up considerable time but, here again, we have that closer contact.

We hold monthly safety meetings at which time we analyze all accidents by discussion and diagrams. We explain corrective measures that could have prevented, or will prevent, a reoccurrence.

We keep our fleet clean and in first  
(TURN TO PAGE 82, PLEASE)



## when you use HERBRAND TOOLS

There's a big plus advantage when you use Herbrand Quality Tools.

Advanced design, precision craftsmanship, maximum flexibility and balance combine to make these tools right from every angle. Herbrand Quality Tools provide an absolutely accurate fit on parts for which they are made, and possess a reserve strength that comes

in handy for those super-tough jobs.

We are doing our utmost to meet the big demand for the complete line of Herbrand Tools. If there are items you cannot get at this time, we feel sure you will agree that Herbrand Tools are worth waiting for.

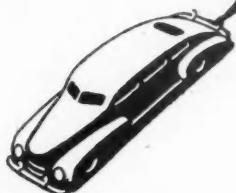
Ask your jobber for details or write us.

**THE HERBRAND CORPORATION • Fremont, Ohio**

*Drop-Forged Tools Since 1881*



# Performance goes up in smoke...

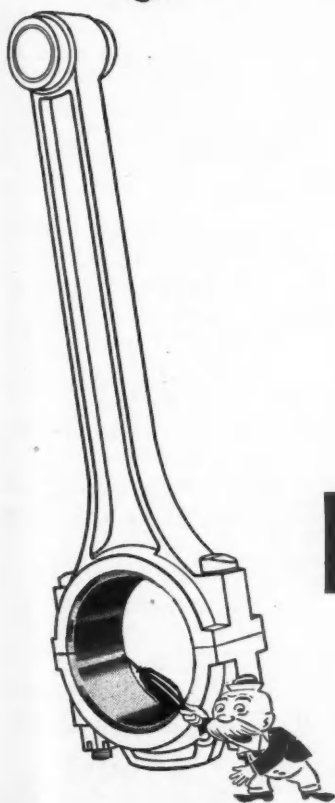


**when worn  
connecting rod bearings  
cause oil pumping**

Every engine opened up to correct oil pumping should have new bearings installed. Worn bearings let excess oil burn to carbon on new piston rings, pistons, spark plugs, valves. New bearings protect you against come-backs on overhauls and cost little more at the time of overhaul. Federal-Mogul bearings are your best bet, because they are engineered for the job of oil control!

**FEDERAL-MOGUL SERVICE**  
DIVISION OF FEDERAL-MOGUL CORPORATION  
COLDWATER, MICHIGAN

Replace in Sets with Genuine  
**FEDERAL-MOGUL**  
Oil-Control Bearings



## Bonus Plans

(CONTINUED FROM PAGE 30)

class mechanical condition, and our drivers take pride in their everyday work.

We have designed a new air-brake system as an additional safety factor, which has worked so well it is now under consideration by the Interstate Commerce Commission for use on all heavy-duty equipment.

We have designed the Silver Eagle

Fifth Wheel for our truck and trailer combinations, insuring better road stability and increased safety of operation. Some insurance companies desire their use on equipment insured by them.

We have designed new tanks which have also been a contributing factor as they were primarily designed to eliminate the hazards of fire caused by structural failures.

We have geared our equipment to a top speed of 45 m.p.h., thereby reducing the largest one contributing

factor in the majority of accidents.

The suggestions outlined have proved very advantageous to our own organization, and we pass them along hoping they will be beneficial to others.

**END**

(Please resume your reading on P. 36)

## Quiz Answers

### CCJ Quiz on Page 64

Statistics are based on Interstate Commerce Commission reports as compiled by American Trucking Associations, Inc.)

1. b. The average haul in 1944 was 193 miles, which is just about the distance between New York and Baltimore.

2. b. The average motor carrier is now getting slightly less than 5 m.p.g. Before the war he got just a little above 5 m.p.g.

3. c. The year 1943 showed 82.9 m.p.q. This, too, was higher before the war.

4. c. Here's your average for the year 1944—8.39 tons.

5. b. Local service. 1943 statistics show 175 semi-trailers to every 100 tractors in local service against 123 semi-trailers for every 100 tractors in intercity service.

6. b. For 1943, the average employees per power unit was 3.2, so that would make about 100 employees. With the loosening of the manpower situation, though, this has probably increased slightly since the end of the war.

7. b. The average annual mileage per truck is roughly 44,000 miles. The distance to the moon will vary from 221,463 miles to 252,710 miles.

8. d. For 1943, the last year for which we have complete figures, the average taxes on each truck or tractor operated by Class I motor carriers amounted to \$1403.

9. a. Average freight revenue per intercity ton-mile in 1943 was 3.8 cents.

10. a. The trucking industry pays about 10 per cent higher. Annual wage in 1944 for the trucking industry was \$2395 per employee. For private industry as a whole it was \$2189. Both have risen since that time.

**END**

(Please resume your reading on P. 68)

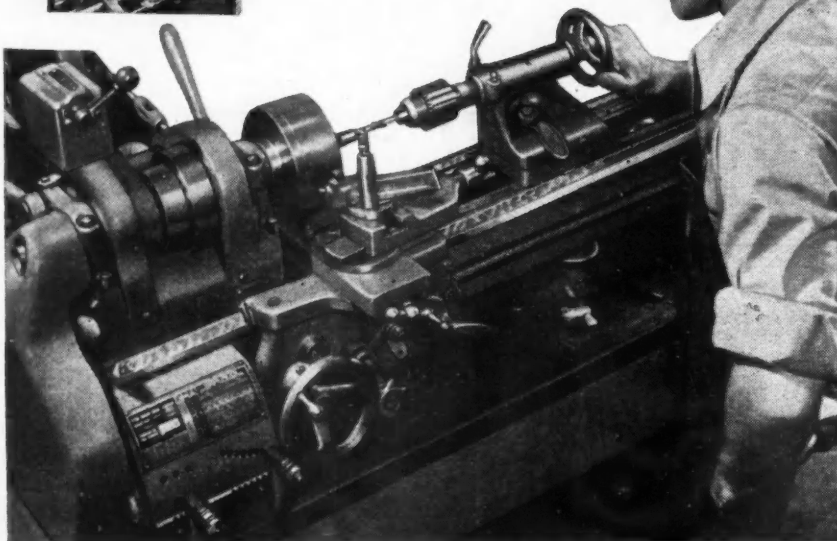
## THE MOST USEFUL TOOL in the MAINTENANCE SHOP

No tool serves a wider variety of needs in the automotive service shop than a South Bend Precision Lathe. In it, new parts can be made quickly, economically, and to original factory tolerances, and many old parts can be reconditioned to give extra service. Turning, facing, boring, drilling, reaming, tapping, thread cutting, filing, honing and lapping are only a few of the many operations which it handles easily and efficiently. With this versatile machine tool, more and better service jobs can be turned out in less time. Most important, a South Bend Precision Lathe will help you to keep your fleet units on the road more of the time, longer, and at lower cost. Write today for more information and a complete, full-color catalog.



### WRITE FOR FREE CATALOG

Catalog 100-F illustrates and describes 9", 10", 13", 14-1/2", and 16" South Bend Engine Lathes and Toolroom Lathes. Mention size lathe in which interested, please.



LATHE BUILDERS SINCE 1906

**SOUTH BEND LATHE WORKS**

445 E. Madison St., South Bend 22, Indiana





## "100 Diamond T's in our fleet...we like DIAMOND T *reliability*"

"WE operate over one hundred Diamond T's," writes Joseph Robinson, president of Highway Transport, Inc., "and some of the older vehicles have mileage well into seven figures with only the usual maintenance and repairs. Through the years Diamond T's have given excellent service for every kind of work from light delivery to heavy hauling from docks, rail-heads and warehouses."

This newest Model 509 is part of Highway's air-freight division, which completes the job of super-speed transport against split-minute schedules. Air-

freight travels twice by truck and only once by plane, and truck reliability is MUST No. 1.

The new Diamond T's now in production are the finest we have ever built—more power, higher speeds, longer life. Try two or three in your own fleet and make your own comparison. You'll see what we mean. Your Diamond T dealer will be getting more trucks right along now, and he can help you keep the old ones on the job in the meantime.

DIAMOND T MOTOR CAR CO. CHICAGO  
*Established 1905*



# DIAMOND T TRUCKS



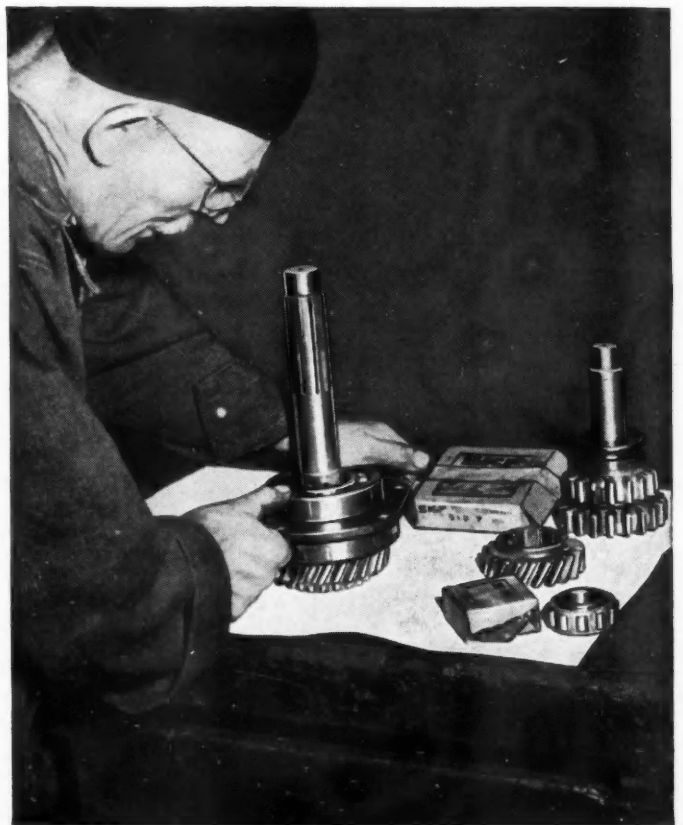
# REDUCING Your *Mileage* Costs

● The bearing that's better bears three simple letters: "SKF"!

New trucks and buses are gradually becoming available, but many fleet operators are still having difficulty in obtaining many parts for replacement. That's why, when they consider bearings, they make certain the bearings they use are backed by years of performance records . . . are handled carefully, installed correctly, and lubricated properly. They know that "the right bearing in the right place" means less wear of related parts, low mileage costs, maintained schedules—rider satisfaction. When *you* need bearings, contact your nearest SKF Distributor.

6184

SKF INDUSTRIES, INC.  
Front St. and Erie Ave., Phila. 32, Pa.



## Trouble Shooting Spring Troubles

(CONTINUED FROM PAGE 60)

complete inspection of all the springs of a vehicle can be done in the matter of a few minutes.

Little or no comment is required about the illustrations as they are self-explanatory. Fig. 1, for example, shows a vehicle that is low on one side. This is caused by a weak or broken spring. Fig. 2 is an extreme example of a sagging rear axle housing caused by fatigued springs' inability to support given weight. This condition can be prevented by proper springing and by not permitting overloading. Fig. 3 may indicate that the vehicle is greatly overloaded or be a sure sign of sagging, although sometimes it may indicate a bent frame. Other effects of sagging, or spring weakness, are shown in Fig. 4, which shows damage to rubber bumper on frame, and Fig. 6, which illustrates possible damage to frame itself, if there is no bumper.

Springs are very closely related to wheel alignment, as shown in Fig. 6. When the front spring sags, it changes the entire front end alignment, causing early deterioration of tires, shock absorbers, steering mechanism, etc. When a rear spring sags, it forces the housing back, perhaps more on one side than the other, changing the tracking, causing excess tire wear, etc.

One other point illustrated can be expanded to insure maximum spring life. Helpers are designed to come into action only when overloads are carried, or when striking an obstruction or a rut in the road. When the vehicle is empty, there is usually a clearance of one to two inches between the end of the helper spring and the bracket. If, however, they contact when the truck is empty, as shown in Fig. 21, it is usually an indication that the main springs are sagged and are not carrying the load.

### Preventing Breakdowns

**M**ANY spring shops are behind in their spring repair work. They frequently are unable to do work when the emergency arises and are forced to make appointments as much as several days, or perhaps a week, in advance—which means that the broken spring might put equip-

ment out of commission for the entire period. If, however, the defect is noticed by inspection before the breakdown occurs, the vehicles can be used with lighter loads and with greater care until the shop can handle the repair.

A slight repair, as replacing a broken center bolt, a worn bushing, closing a loose eye, repairing a rebound clip, is a much less expensive job than replacing a complete spring, and if these slight defects are caught

early, a tremendous economy can be effected in spring maintenance costs.

Spring inspection can be done in your regular PM inspection routine right in your own shop or it can be done by the specialists in your local spring shop. Frequently, the local spring jobber or spring service station representative is prepared and qualified to make these inspections right in the fleet garage.

**END**

(Please resume your reading on P. 62)



**SI-EN-TIF-IK**  
MOTOR  
RECONDITIONER

**FOR MOTORS  
COATED WITH  
CARBON**

"Carbon-itis," a very common motor ailment, can be fatal to trucks if improperly diagnosed or if not treated in early stages. The symptoms are sluggishness, lack of pep, increased appetite for gas and oil, loss of power. The remedy is a thorough treatment with SI-EN-TIF-IK Motor Reconditioner. It quickly loosens and eliminates carbon, sludge and motor varnishes. Gives your trucks a new lease on life, new pep, new power, new smoothness. SI-EN-TIF-IK was especially developed by skilled chemists to clean and rejuvenate old motors—keep new motors new! Use SI-EN-TIF-IK with every oil change—it's the easy, safe, economical way to keep your trucks "in the pink" and on the road.

**FOR DIESEL AND GASOLINE ENGINES.** SI-EN-TIF-IK is available in bulk quantities for large users. Write for quotations and further information if the distributor in your area has not called on you.

SI-EN-TIF-IK Quality products are sold on a money-back guarantee



**SI-EN-TIF-IK**  
PRODUCTS CO., INC.  
2301 So. LaSalle Street • Chicago 16, Ill.

# CCJ NEWSCAST



## AAMVA URGES UNIFORM IDENTIFICATION, MORE RECIPROCITY

In addition to a recommendation for complete adoption of the ASSHO code on size and weight limitations (CCJ, Dec., p. 146) the American Association of Motor Vehicle Administrators at its recent meeting in San Francisco went on record as strongly favoring adoption of the proposed plan for uniform vehicle identification numbers to be mounted on some part of the vehicle other than the engine.

The association's committee on reciprocity went further than any previous step yet taken, by urging that states not authorized to enter into complete reciprocity agreements submit to their legislatures such legislation as will insure prompt action.

## FRONT BRAKES CONDEMNED

Elimination of existing ICC requirements for front-wheel brakes on heavy-duty vehicles, particularly with more than three axles, is the subject of a concerted drive by four west coast user groups. Safety is the keynote of the campaign, numerous instances being cited to show that under certain highway conditions the front wheel brakes actually are dangerous. Participating groups include the Eleven Western State Conference of ATA, Oregon Motor Transport Association, Truck Owners Association of California and Motor Truck Association of Southern California.

## "SAFETY IS NO ACCIDENT"

"Safety Is No Accident" was selected by the ATA from more than 5000 contest entries as the slogan for its 1947 safety campaign. The slogan was submitted by H. L. Halverson, of St. Paul Terminal Warehouse Co., St. Paul, Minn.

## NEW ITEMS AT HUGE ASI SHOW

Approximately 3000 persons a day pondered over the wares of some 431 exhibitors at the 1946 Automotive Service Industries Show in Atlantic City during the week of Dec. 9. Bigger by a comfortable margin than the last previous show (1940) in Chicago it was considered an outstanding success by manufacturer, exhibitor and jobber attendees alike.

*Commercial Car Journal's* entire staff was on hand to get first-hand information on many new items in the replacement parts, tools and shop equipment category of interest to fleet owners. Many of these are described in the New Products section of this issue. Others will be reviewed in subsequent issues.

## DATES AND DOINGS

**JAN. 26**—Illinois Motor Truck Operators Assn. Annual Banquet, Stevens Hotel, Chicago, Ill.

**FEB. 6**—New York State Motor Truck Assn. Annual Dinner, Pennsylvania Hotel, New York City.

**FEB. 21-22**—Idaho Motor Transport Assn. Annual Convention, Owyhee Hotel, Boise, Idaho.

**MAR. 4-5-6**—Louisiana Motor Transport Assn. Annual Convention, Roosevelt Hotel, New Orleans, La.

**MAR. 25-28**—Greater New York Safety Council Convention and Exposition, Hotel Pennsylvania, New York City.

**MAR. 28-29**—Wyoming Trucking Assn. State Convention, Townsend Hotel, Casper, Wyoming.

**JUNE 13-14**—Pennsylvania Motor Truck Assn. 14th Annual Meeting, Penn Harris Hotel, Harrisburg, Pa.

**JUNE 14-15**—Motor Transportation Assn. of S. C. Annual Convention, Ocean Forest Hotel, Myrtle Beach, S. C.

**JULY 18-19**—Utah Motor Transport Assn. Annual Convention, Hotel Utah, Salt Lake City, Utah.

## CARRIERS ON THE MOVE

Class I motor carriers of property showed a 21.6 per cent increase in gross revenues for the third quarter of 1946 compared with the same period of 1945, according to a cross-section sampling compiled by the American Trucking Associations, Inc. Expenses for the same period increased 16.2 per cent giving the carriers a ratio of expenses to gross of 94.7 per cent which also compares favorably with the record low profit ratio of 99.1 per cent in the 1945 period. Intercity miles operated increased 12.1 per cent while tons hauled increased 9.8 per cent.

ATA also pointed out that the October truck loading index (based on 1938-1940 average as 100) stood at 204. This figure was equalled by the August 1946 index and surpassed only by the record high of 205 in March 1943.

## AUTOMOTIVE SURPLUS SALE

A continuous "sale on location" of surplus automotive stock is now being conducted by the War Assets Administration at Lordstown, Ohio, about five miles from Warren. Priority is not required and standard discounts are allowed to fleet owners. In addition, up-to-date catalogs

of inventory on hand are maintained by all WAA regional offices.

Equipment includes compressors and dry vacuum pumps with capacities up to 31 cu. ft. per min. or ratings up to 7½ hp.; lubrication; tire repairing machinery; automobile lifts; brake service; headlight testing; portable wheel alignment; motor testing; all other automobile service station equipment items; grinders—bench, stand and snagging up to and including a six inch diameter (service station types) and garage type roller jacks.

## BRITAIN'S TAKE-OVER PLAN

The British Transport Bill for nationalization of the trucking industry is now in final stages of preparation in the House of Commons. As seen through our best long-distance lenses it boils down approximately to this:

"A" and "B" licencees, the British equivalents of our common and contract carriers, whose predominant operations are 40 or more miles in length will be taken over by the newly created Transport Commission. Owners will be compensated on a basis of physical assets and a percentage of their average net profits. Local carriage vehicles in this group will remain under present owners but will be restricted in operation to 25 miles. Furniture movers and carriers of liquids in bulk, meat, livestock and heavy indivisible loads will not be taken over.

"C" licencees, equivalent to our private carriers, will also remain under private ownership but will be limited, generally, to a radius of 40 miles.

## AAA CRYSTALLIZES POLICY

Prompt repeal of the Federal gasoline tax, better driver training and adoption of uniform sizes and weights were among highlights of most importance to fleetmen in the recent policy statement issue by the American Automobile Association.

According to the AAA, high-school-trained drivers have a much lower accident rate than other groups and extension of the program to states not presently participating was urged. Re-examination of drivers, the association stated, should be concentrated among repeated violators. Size and weight standards were reaffirmed as follows: height, 12½ ft.; length for single vehicles, 35 ft.; axle load limit, 18,000 lb., and width 96 in. With regard to the proposed 102 in. width limitation, the AAA suggests postponement until the preponderance of roads are at least 20 ft. in width.

(TURN TO PAGE 88, PLEASE)



# NOW! in DETROIT-

## A New and Larger POWER BRAKE DIVISION at MIDLAND STEEL

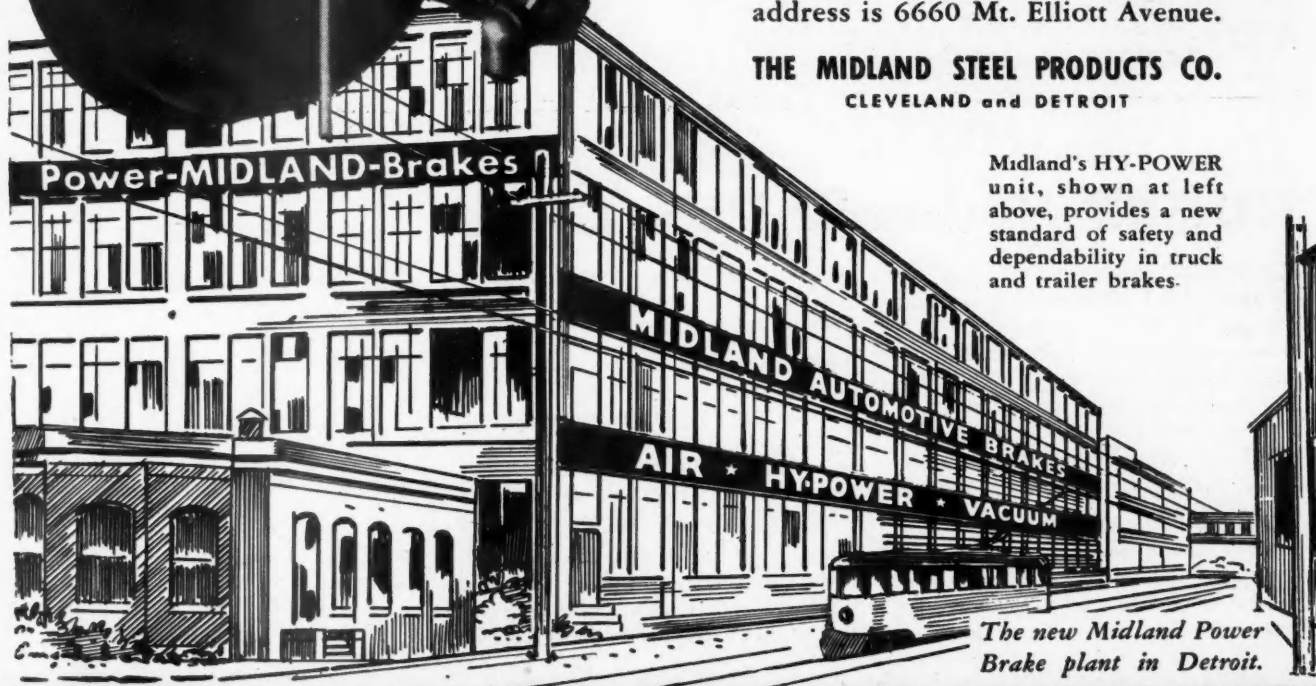
The entire Midland Power Brake Division has been moved to a plant all its own in Detroit. Here, with double the previous floor space, productive capacity has been greatly increased.

With this larger factory, and much new, modern equipment, we will be able to offer better service in meeting the increased demand for Midland Air and Vacuum Brakes, Controls and other products.

You are cordially invited to take advantage of the increased facilities and engineering experience which we now place at your service. Write, wire, phone or call. Our new Detroit address is 6660 Mt. Elliott Avenue.

**THE MIDLAND STEEL PRODUCTS CO.**  
CLEVELAND and DETROIT

Midland's HY-POWER unit, shown at left above, provides a new standard of safety and dependability in truck and trailer brakes.



*The new Midland Power Brake plant in Detroit.*

# MIDLAND

BUS DOOR CONTROLS • POWER BRAKES • CRANES and MACHINERY CONTROLS

## NEWSCAST

(CONTINUED FROM PAGE 86)

### RESEARCH BOARD IN ACTION

A steering sub-committee of the Highway Research Board on the Economics of Motor Vehicle Sizes & Weights (CCJ, Nov. p. 191) has submitted its first report to the full committee projecting three principle types of research for committee action. They are: a pilot study of the operations of selected new vehicles of various types, some larger than now generally allowed; a case study of representative actual operations; and, a general economic

### 1946 Domestic Truck Factory Sales by Gross Vehicle Weight\*

| G. V. W. (lb.)  | 5,000 and Less | 5,001-10,000 | 10,001-14,000 | 14,001-16,000 | 16,001-19,500 | 19,501-26,000 | Over 26,000 | Total   |
|-----------------|----------------|--------------|---------------|---------------|---------------|---------------|-------------|---------|
| January.....    | 17,331         | 3,151        | 6,713         | 8,457         | 1,121         | 1,950         | 1,208       | 37,931  |
| February.....   | 11,822         | 2,783        | 5,481         | 3,156         | 869           | 1,569         | 1,028       | 26,708  |
| March.....      | 14,433         | 1,719        | 5,012         | 5,630         | 325           | 1,104         | 872         | 29,095  |
| April.....      | 23,956         | 4,508        | 18,098        | 11,985        | 1,516         | 1,647         | 910         | 62,520  |
| May.....        | 23,122         | 4,406        | 13,381        | 13,819        | 1,635         | 1,576         | 1,008       | 59,947  |
| June.....       | 29,657         | 4,396        | 8,286         | 4,412         | 1,279         | 1,309         | 928         | 60,247  |
| July.....       | 26,610         | 6,602        | 17,196        | 17,351        | 1,820         | 1,574         | 855         | 72,008  |
| August.....     | 30,210         | 6,072        | 21,284        | 16,841        | 1,324         | 1,827         | 925         | 78,283  |
| September.....  | 29,348         | 8,263        | 22,346        | 13,040        | 1,589         | 1,705         | 1,186       | 77,477  |
| October.....    | 32,166         | 13,167       | 21,870        | 13,672        | 2,369         | 2,444         | 2,367       | 88,198  |
| November.....   | 26,171         | 10,794       | 17,014        | 16,754        | 2,685         | 2,476         | 1,227       | 79,101  |
| Total 11 Months | 264,846        | 66,861       | 156,761       | 125,117       | 16,512        | 18,881        | 12,534      | 651,512 |

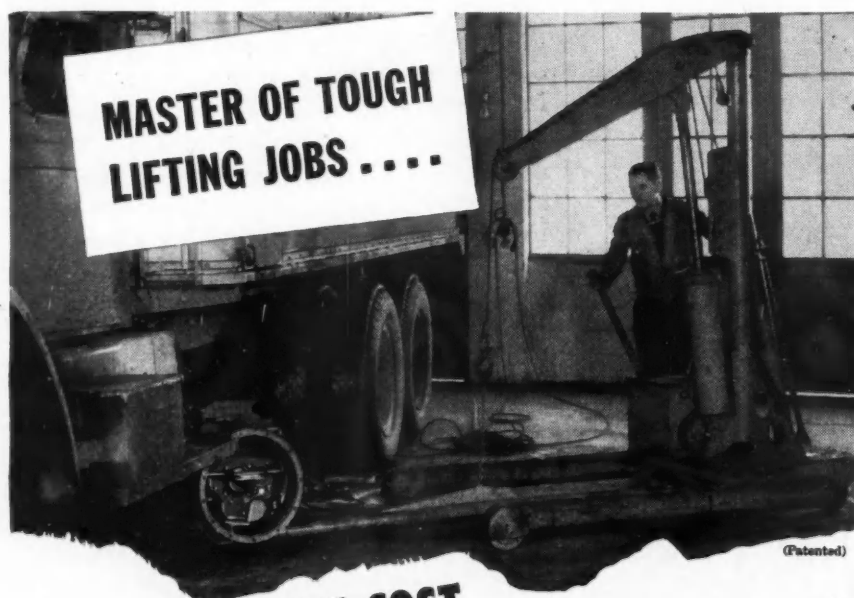
\*—Automobile Manufacturers Association.

study of broad operational data derived from various sources under existing reporting procedures.

### 1946 Truck Trailer Production\*

| Vans                                | October | 10 Months |
|-------------------------------------|---------|-----------|
| Insulated .....                     | 69      | 976       |
| Refrigerated .....                  | 481     | 1,927     |
| Furniture .....                     | 41      | 1,604     |
| All other closed top.....           | 3,120   | 22,014    |
| Open top .....                      | 276     | 1,522     |
| Total Vans .....                    | 3,987   | 28,043    |
| Racks                               |         |           |
| Cattle Racks .....                  | 430     | 3,896     |
| Stake Racks .....                   | 341     | 2,798     |
| Total Racks .....                   | 771     | 6,679     |
| Tanks                               |         |           |
| Petroleum .....                     | 181     | 1,488     |
| Other .....                         | 84      | 601       |
| Total Tanks .....                   | 265     | 2,089     |
| Pole and Logging                    |         |           |
| Single Axle .....                   | 742     | 4,978     |
| Tandem Axle .....                   | 152     | 1,226     |
| Total .....                         | 894     | 6,204     |
| Platforms .....                     | 1,433   | 9,360     |
| Low-bed haulers (over 15 ton) ..... | 152     | 1,600     |
| Off-highway .....                   | 68      | 478       |
| Dump trailers .....                 | 155     | 572       |
| All other trailers .....            | 428     | 2,037     |
| Total All Trailers.....             | 8,153   | 57,062    |
| Trailer Chassis .....               | 578     | 4,837     |
| Total Trailers and Chassis          | 8,731   | 61,899    |

\* Industry Division—Bureau of the Census.



### THE LOW-COST

## RUGER Hydraulic Floor Crane

FOR PICKING an engine right out of a chassis, removing and replacing heavy transmissions, transporting engines, transmissions, differentials and other heavy assemblies to cleaning and inspection . . . for these and dozens of similar tough lifting and handling jobs the Ruger is literally "made to order."

There's no other like the Ruger . . . it gives you advantages both of floor jack and overhead crane plus advantages neither can offer. For the Ruger reaches out, over, under . . .

picks up, lifts, lowers, carries heavy loads . . . goes wherever you can push a floor truck.

The secret of Ruger efficiency is its simple, effective combination of hydraulic power and cantilever boom. That also explains why the Ruger is so easy and safe to operate . . . only two controls, pump lever and release valve . . . anyone can use a Ruger.

Ruger Hydraulic Floor Cranes are built in 1-ton, 2-ton and 3-ton sizes. Write for bulletin and complete description to nearest address below.

# RUGER Equipment Co., Inc.



### Load Lifting and Handling Devices

408 Leader Bldg.  
Cleveland 14, Ohio

P. O. Box 3821  
Portland 8, Oregon

### INDUSTRIAL NOTEBOOK

To better serve the truck market we note that International Harvester has established separate truck branches at Columbus, Ohio; Ft. Wayne, Ind.; Little Rock and Davenport. General line branches will be continued at these points.

Thornton Tandem Co., long a by-word in the third-axle field, has outgrown its name, thanks to its locking differential and other new products on the way. Hence, effective at once, the company will be known as Detroit Automotive Products Co. Truck-stell Co. will continue as its U. S. distributor.

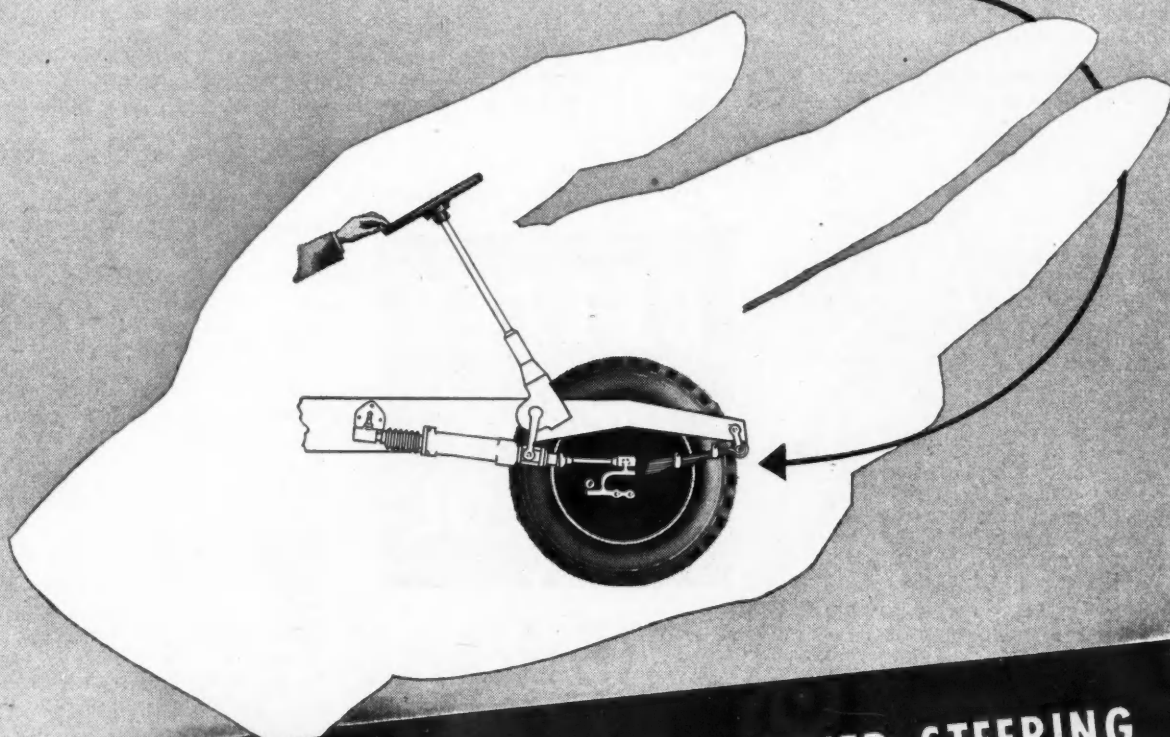
The CleDraulic Co. of Cleveland, a division of the Gabriel Co., has acquired all inventory of the automotive division of the Cleveland Pneumatic Tool Co. Production of heavy-duty hydraulic shock absorbers and the Gruss air spring will be continued.

Two new Supercargo trailer distributors have been announced by American Bantam Car Co., Butler, Pa. They are Highway Equipment Co., Inc., Newark, N. J., for metropolitan New York and northern New Jersey and Security Trailer Corp., West Collingswood, N. J., for southern and central New Jersey.

(TURN TO PAGE 90, PLEASE)



# INSTANTANEOUS FINGER-TIP RESPONSE



## with **VICKERS** HYDRAULIC POWER STEERING

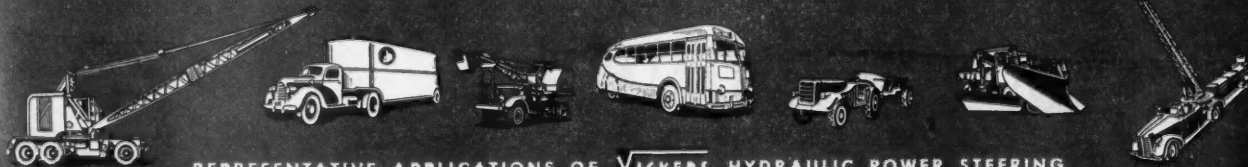
Two fingers on the steering wheel—it turns easily, and the front wheels of the heaviest truck or bus follow exactly. Vickers Hydraulic Power Steering does the work. And steering is just as easy over the roughest ground off the road as it is on smooth concrete. Road shock cannot be transmitted from the front wheels to the steering wheel or driver.

Steering is instantly responsive and firm—no rubbery feeling or wander. The driver is relieved of the

most exhausting part of his job, enabling him to get more done with less fatigue.

Vickers Hydraulic Power Steering has many other advantages: (1) requires minimum space and is applied to most existing hand steering mechanisms with a few simple alterations; (2) automatic protection against abuse and excessive steering reaction forces; (3) automatic lubrication; (4) 15 years of successful operating experience. Ask for Bulletin 44-30.

**VICKERS Incorporated** • 1418 OAKMAN BLVD. • DETROIT 32, MICHIGAN  
 Application Engineering Offices: CHICAGO • CINCINNATI • CLEVELAND • DETROIT • LOS ANGELES • NEWARK • PHILADELPHIA  
 ROCHESTER • ROCKFORD • TULSA • WORCESTER



REPRESENTATIVE APPLICATIONS OF **VICKERS** HYDRAULIC POWER STEERING



## INTRODUCING . . . (NEWSCAST CONTINUED FROM P. 38)

. . . WILLIAM BURNETT, head of the newly created experimental section of Ford Motor Co. engineering dept.

. . . H. E. GOTTBERG, now assistant manager of manufacturing, motor truck division, International Harvester Co.

. . . W. C. HUMPHREYS, who succeeds Bert Oakley, Jr. (transferred) as New York branch manager of Hall Scott Motor Car Co., a division of ACF-Brill Motors Co.

. . . H. G. YOUNGBLOOD, superintendent of garage for Birmingham Electric Co.

. . . ROBERT F. WHITWORTH as division sales coordinator and GEORGE W. MURPHY as branch sales coordinator for Gar Wood Industries, Inc. RUSSELL D. HILLER, JR., is new district manager in Tulsa.

. . . NORMAN A. PAELKE and D. S. SHIMP, eastern and southeastern division managers, respectively, for Sherwin-Williams Co. automotive finish sales div.

. . . the following district sales managers for Ford Motor Co.: C. H. O'DONOHUE at Chicago, LESLIE H. LUTZ at Richmond,

Cal., NELSON F. BOWE at Edgewater, N. J., EARLE S. ALEXANDER at Houston, Tex., HENRY H. REISER at Salt Lake City, Utah, JAMES P. ROBERTS at Long Beach, Cal., and C. A. MILLS at St. Louis, Mo.

. . . W. W. LAWN, E. W. FLETCHER and E. W. ROBERTSON, as Fruehauf Trailer Co. branch managers in New York City, Newark, N. J., and Scranton, Pa., respectively.

. . . E. F. HERMAN, as northeastern district manager for Walker Mfg. Co. with headquarters in New York. J. H. COOPER will assist in an advisory capacity.

. . . PAUL W. BERRY, as Kraft engineer for General Tire & Rubber Co. in Portland, Ore.

. . . DAVID L. SIMPSON as general manager and C. R. CRICHFIELD, in charge of plant operations, for "X" laboratories, Inc., New York.

. . . B. O. TOBIN, who has rejoined the Trippe Mfg. Co. as general sales manager.



The new pump type operator shown above is used to actuate the S. & J. Hydraulic Safety Valves for truck tanks. It incorporates many improvements over prewar models in which one stroke of the handle was required to open one or more valves. With this new operator, hydraulic pressure is "pumped up" by several light strokes, and the truck driver can actually feel when the internal valves are open. A pressure gauge, standard on all operators, tells the driver the exact condition of pressure in the system.

Above, S. & J. Internal Hydraulic Safety Valve for truck tank compartments. Working parts are removable through dome cover of tank compartments. Operates on compressed air as well as hydraulic pressure.

**SHAND & JURs CO.**

BERKELEY, CALIFORNIA

NEW YORK CHICAGO HOUSTON LOS ANGELES SEATTLE

**SHAND & JURs**

. . . T. C. MALLON, assistant manager, commercial and truck dept., Chevrolet Motor Div. He was former zone manager in Omaha



. . . N. S. PRIME, who joins Walker Mfg. Co. as director of engineering after 20 years' service in the Navy

. . . R. B. PIRTLE, as manager of Trailmobile Co's. Detroit factory branch. He succeeds D. M. Vandenburg who will handle special assignments at Cincinnati



. . . HOWARD J. HOPKINS, new general sales manager of the after-market division of Purolator Products, Inc.

. . . Ex-Coast Guard Commander FRANK J. BENNETT, now administrative assistant in Federal-Mogul Corp.'s service division





*For blow-by control, too...*

NOT 2...

NOT 6...

but **26**

**basic designs**

# OF SEALED POWER PISTON RINGS

Power that blows by piston rings is wasted power, so blow-by control is one of the four vital requirements for **BALANCED PERFORMANCE**. The others are oil control, low friction, and minimum wear. You get **ALL FOUR** when you use Sealed Power Individually Engineered Ring Sets, made up from twenty-six (26) basic designs of piston rings. Whatever the make, model, or cylinder wear condition, there is a Sealed Power Set specifically engineered to do the best possible job. Sealed Power has been refining these sets for seven years, has been producing rings for car, truck, and engine builders 35 years. For best results, re-power with Sealed Power motor parts. Sold by leading distributors. Sealed Power Corporation, Muskegon, Michigan and Stratford, Ontario.

Piston Rings, Pistons, Cylinder Sleeves, Piston Pins, Valves, Water Pumps, Bolts, Bushings, Tie Rods, Front End Parts



**INDIVIDUALLY  
ENGINEERED**



# SEALED POWER PISTON RINGS

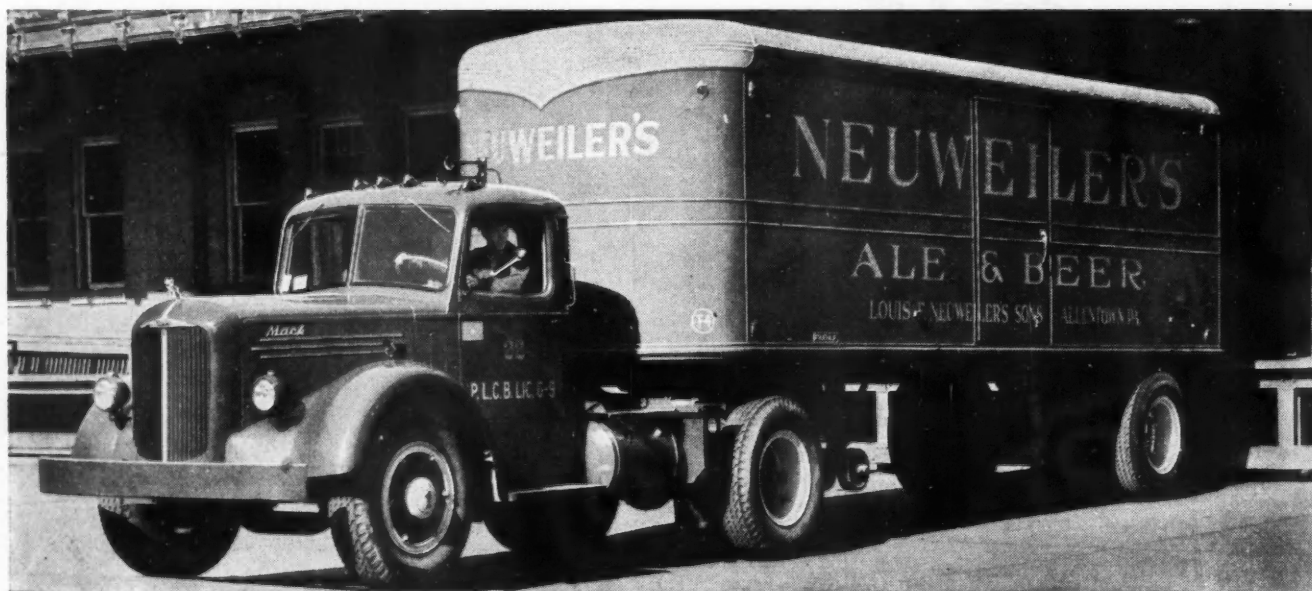
BEST IN NEW TRUCKS! ★ BEST IN OLD TRUCKS!

Keep your War Bonds!  
Get \$4 for \$3!



## 3 Million-Milers... all named ***MACK!***

This Veteran of the highways is one of *three* Mack BX's that have clocked a million miles apiece for L. F. Neuweiler's Sons of Allentown, Pa. Today, with 12 continuous years of work behind them, these Macks are rolling regular schedules as economically as ever, lugging capacity loads through central Pennsylvania, Maryland, District of Columbia and Virginia.



Amazingly low maintenance cost and all-around reliability of their Macks has led Neuweiler's Sons to order seven new model LFT tractors such as the one above. Although in operation only a short time, these new Macks have already effected a considerable saving in driver overtime costs through faster delivery on long runs.

Why not let Macks cut your hauling costs? They're harder-working, longer-lasting, more economical—the biggest value your trucking dollars can buy.

**Mack**  
TRUCKS  
FOR EVERY PURPOSE



**Performance  
Counts!**

Mack Trucks, Inc., Empire State Building, New York 1, New York. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities for service and parts.



# TRUCK SPECIFICATIONS TABLE

## OF 1946 PRODUCTION MODELS

DATA SUPPLIED BY MANUFACTURERS AND TABULATED BY  
COMMERCIAL CAR JOURNAL

### KEY TO DEFINITIONS, REFERENCES AND ABBREVIATIONS

#### DEFINITIONS

##### MAKE AND MODEL

Only Domestic Truck Models are listed.

##### OPTIONAL UNITS

For the express purpose of best fitting the truck to the individual job most of the models listed can be provided with optional engines, transmissions, axles, etc., and these models when so equipped are considered standard stock models.

##### CHASSIS LIST PRICE

The chassis list price applies to the minimum standard wheelbase with standard tires and standard equipment. All prices are F.O.B. factory. Chassis list price does not include the price of the Cab unless otherwise noted.

##### RECOMMENDED GROSS VEHICLE WEIGHT FOR NORMAL SERVICE

The Gross Weights published herewith are those supplied by manufacturers as their Recommended Gross Vehicle Weights for Normal Operating Conditions.

##### MAXIMUM AUTHORIZED TIRE SIZE

The tire size listed in this column is the maximum size recommended by the manufacturer of the chassis for the Gross Vehicle Weight for Normal Operating Conditions. It is furnished at extra cost, if it differs from the standard size. Dual rear are underlined; exceptions noted.

##### MINIMUM STANDARD WHEELBASE

The minimum standard wheelbase is the so-called standard wheelbase on which the Chassis List Price is based.

##### MAXIMUM STANDARD WHEELBASE

The maximum standard wheelbase is the extreme end of the standard range of wheelbases offered by the chassis maker.

##### MAXIMUM BRAKE HP.

Maximum Brake Horsepower at Given R.P.M. is actual dynamometer reading without accessories.

##### GEAR RATIO RANGE

Gear Ratio Range in High—Ratios within the range given are available at no extra cost. Exceptions are noted.

##### TRACTORS

Unless given the designation (N)—meaning not available as a tractor—all standard models may be assumed to be available as tractors. Exclusively Tractor models are designated (T).

#### KEY TO REFERENCES

(a)—Cab Forward design.  
(b)—Cab Over-Engine design.  
(c)—Diesel-engine equipped.  
(T)—Designed for tractor use only.  
(C)—Converted Ford or Chevrolet Model.

(2) International Harvester—Specifications shown represent only the basic standard chassis units and standard chassis ratings in keeping with definitions established by Commercial Car Journal. Optional units not shown such as engines, clutches, transmissions, axles or axle ratios, brakes, wheels and

(a)—Available with Eaton Two-Speed Axle designated KS Models.  
(b) Current models will include, at additional cost, certain items not considered standard equipment. These items are listed in the specifications and are listed below—Model K-3, oversize transmission; Model K-6, K-7, K-8, K-9, oversize brakes; Model K-8, K-9, oversize engine and brakes; Model K-10, oversize engine and brakes; Model K-11, oversize engine and transmission; Models K-8F and K-11-F, oversize engine and brakes.

tires, frames or frame reinforcements, optional wheelbases or any other units which make up part of the truck chassis and which International will furnish and approve from the factory as optional equipment can or will change either the ratings, chassis weight shown or performance of the truck as indicated by this list.

Also the company reserves the privileges of assigning special gross vehicle ratings for any chassis providing in the opinion of our engineering department, the type of service justifies the new rating without decreasing the safety factor designed into the truck.

#### KEY TO ABBREVIATIONS

##### MAKES—ALL

B—Bendix  
BL—Brown-Lope  
Bu or Bud—Buda  
BW—Bendix-Westinghouse  
C—Chevrolet  
Co or Cont—Continental  
Cum—Cummins-Diesel  
Ea—Eaton  
F—Ford  
Fu—Fulmer  
H—Hercules  
Hr—Hercules  
LH—Lockheed  
LH—Lockheed front, Wagner "H" front  
LW—Lockheed front, Wisconsin rear.  
M—Midland  
N.P.—New Process  
Op or Opt—Optional  
Shu—Shuper  
T or Tim—Timken  
Tw—Timken-Westinghouse  
Wd—Wagner Gear  
W or Ws—Wisconsin  
Wt—Westinghouse  
Ww—Westinghouse or Wagner

##### BRAKES—SERVICE

Location  
4—Four Wheels front and rear.  
4—Four Wheels, rear only.

##### Type

I—Internal  
X—External  
Operation  
A—Air  
H—Hydraulic  
Dp—Dual Primary

##### BRAKES—HAND

Location  
C—Center of double propeller shaft.  
2—Rear wheels.  
4—Four wheels.  
6—Six wheels.

##### FRAME Type

C—Channel  
T—Channel tapered front and rear.  
L—Channel reinforced with liner  
B—Channel reinforced with both liner and fishplate.  
PL—Channel reinforced front and rear reinforced with liner.  
D—Drop Center  
Tr—Tapered front.  
A—Straight section sidemembers, lined with rubber.  
Z—Reinforced (X) member frame, box type sections.

##### GOVERNOR STANDARD

Y—Yes  
N—No

##### REAR AXLE

##### Final Drive and Type

B—Bevel  
CD—Chain Drive

##### F—Full-floating.

Hy—Hypoid.  
d—Dual range axle.  
2—Double Reduction.  
W—Spiral bevel.  
W—Three-Quarter Floating.  
S—Semi-Floating  
T—Torque Tube

##### Gear Ratios

(\*) Only one ratio.

##### Drive and Torque

H—Hotchkiss (springs).  
R—Rear Axle.  
L—Parallel Torque Rods  
T—Torque Arm.

##### WHEELS DRIVEN

2F—Forward unit of Rear Axle Group.  
2R—Rear unit of Rear Axle Group.  
4R—Front and rear units of Rear Axle Group.  
6—All wheels.

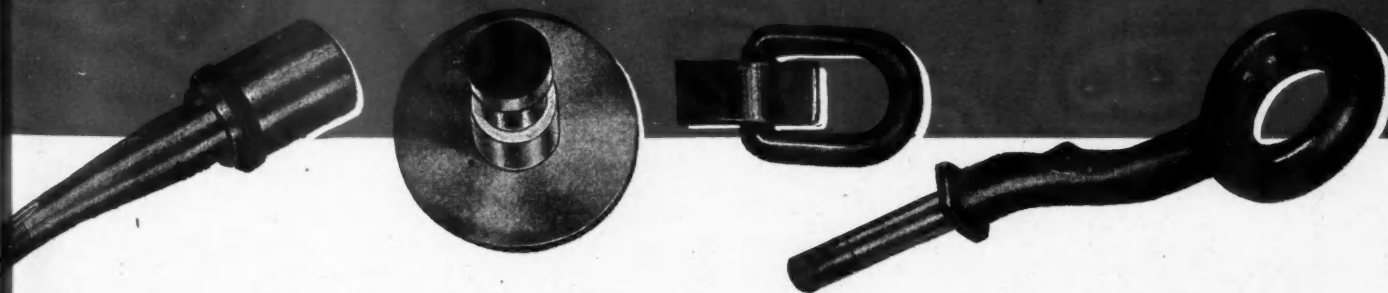
- Includes cab.
- Weight of complete truck tractor less fifth wheel.
- Gross vehicle weight can only be obtained by adding regular options (at extra cost) with Spt 703A with 3 forward speeds.
- Chevrolet own 2-speed rear axle (6.0<sup>\*</sup>:7.99:1) available at extra cost.
- Chevrolet own 2-speed rear axle (6.0<sup>\*</sup>:7.99:1) available at extra cost.
- Max. gross vehicle weight can only be obtained by adding regular options (at extra cost).
- Chevrolet own 2-speed rear axle (6.0<sup>\*</sup>:7.99:1) available at extra cost.



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# SHULER AXLE LINE -

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IN addition to its famous lines of axles and brakes, Shuler manufactures a wide variety of high-quality forgings for all kinds of automotive equipment.

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With optional 108-A, with 3 10-WARD speeds.  
\* Max. gross vehicle weight can only be obtained by adding regular production options (at extra cost).  
\* Own Loadmaster engine available on motor PJ-2-K-1-L at extra cost.  
† For Commercial 3071, 3071-1, 3071-2, 3071-3, 3071-4, 3071-5, 3071-6, 3071-7, 3071-8, 3071-9, 3071-10, 3071-11, 3071-12, 3071-13, 3071-14, 3071-15, 3071-16, 3071-17, 3071-18, 3071-19, 3071-20, 3071-21, 3071-22, 3071-23, 3071-24, 3071-25, 3071-26, 3071-27, 3071-28, 3071-29, 3071-30, 3071-31, 3071-32, 3071-33, 3071-34, 3071-35, 3071-36, 3071-37, 3071-38, 3071-39, 3071-40, 3071-41, 3071-42, 3071-43, 3071-44, 3071-45, 3071-46, 3071-47, 3071-48, 3071-49, 3071-50, 3071-51, 3071-52, 3071-53, 3071-54, 3071-55, 3071-56, 3071-57, 3071-58, 3071-59, 3071-60, 3071-61, 3071-62, 3071-63, 3071-64, 3071-65, 3071-66, 3071-67, 3071-68, 3071-69, 3071-70, 3071-71, 3071-72, 3071-73, 3071-74, 3071-75, 3071-76, 3071-77, 3071-78, 3071-79, 3071-80, 3071-81, 3071-82, 3071-83, 3071-84, 3071-85, 3071-86, 3071-87, 3071-88, 3071-89, 3071-90, 3071-91, 3071-92, 3071-93, 3071-94, 3071-95, 3071-96, 3071-97, 3071-98, 3071-99, 3071-100, 3071-101, 3071-102, 3071-103, 3071-104, 3071-105, 3071-106, 3071-107, 3071-108, 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3071-909, 3071-910, 3071-911, 3071-912, 3071-913, 3071-914, 3071-915, 3071-916, 3071-917, 3071-918, 3071-919, 3071-920, 3071-921, 3071-922, 3071-923, 3071-924, 3071-925, 3071-926, 3071-927, 3071-928, 3071-929, 3071-930, 3071-931, 3071-932, 3071-933, 3071-934, 3071-935, 3071-936, 3071-937, 3071-938, 3071-939, 3071-940, 3071-941, 3071-942, 3071-943, 3071-944, 3071-945, 3071-946, 3071-947, 3071-948, 3071-949, 3071-950, 3071-951, 3071-952, 3071-953, 3071-954, 3071-955, 3071-956, 3071-957, 3071-958, 3071-959, 3071-960, 3071-961, 3071-962, 3071-963, 3071-964, 3071-965, 3071-966, 3071-967, 3071-968, 3071-969, 3071-970, 3071-971, 3071-972, 3071-973, 3071-974, 3071-975, 3071-976, 3071-977, 3071-978, 3071-979, 3071-980, 3071-981, 3071-982, 3071-983, 3071-984, 3071-985, 3071-986, 3071-987, 3071-988, 3071-989, 3071-990, 3071-991, 3071-992, 3071-993, 3071-994, 3071-995, 3071-996, 3071-997, 3071-998, 3071-999, 3071-1000, 3071-1001, 3071-1002, 3071-1003, 3071-1004, 3071-1005, 3071-1006, 3071-1007, 3071-1008, 3071-1009, 3071-1010, 3071-1011, 3071-1012, 3071-1013, 3071-1014, 3071-1015, 3071-1016, 3071-1017, 3071-1018, 3071-1019, 3071-1020, 3071-1021, 3071-1022, 3071-1023, 3071-1024, 3071-1025, 3071-1026, 3071-1027, 3071-1028, 3071-1029, 3071-1030, 3071-1031, 3071-1032, 3071-1033, 3071-1034, 3071-1035, 3071-1036, 3071-1037, 3071-1038, 3071-1039, 3071-1040, 3071-1041, 3071-1042, 3071-1043, 3071-1044, 3071-1045, 3071-1046, 3071-1047, 3071-1048, 3071-1049, 3071-1050, 3071-1051, 3071-1052, 3071-1053, 3071-1054, 3071-1055, 3071-1056, 3071-1057, 3071-1058, 3071-1059, 3071-1060, 3071-1061, 3071-1062, 3071-1063, 3071-1064, 3071-1065, 3071-1066, 3071-1067, 3071-1068, 3071-1069, 3071-1070, 3071-1071, 3071-1072, 3071-1073, 3071-1074, 3071-1075, 3071-1076, 3071-1077, 3071-1078, 3071-1079, 3071-1080, 3071-1081, 3071-1082, 3071-1083, 3071-1084, 3071-1085, 3071-1086, 3071-1087, 3071-1088, 3071-1089, 3071-1090, 3071-1091, 3071-1092, 3071-1093, 3071-1094, 3071-1095, 3071-1096, 3071-1097, 3071-1098, 3071-1099, 3071-1100, 3071-1101, 3071-1102, 3071-1103, 3071-1104, 3071-1105, 3071-1106, 3071-1107, 3071-1108, 3071-1109, 3071-1110, 3071-1111, 3071-1112, 3071-1113, 3071-1114, 3071-1115, 3071-1116, 3071-1117, 3071-1118, 3071-1119, 3071-1120, 3071-1121, 3071-1122, 3071-1123, 3071-1124, 3071-1125, 3071-1126, 3071-1127, 3071-1128, 3071-1129, 3071-1





‡ For other than minimum standard WB-8-1/2x2 1/4  
 † Auxiliary trans. Spicer 6231B, three forward speeds.  
 \* Rear Only: Front 7.50/20. † Rear Only: Front 7.00/17. † Diameter front 2.343, Center 2.376, Rear 2.406.  
 † Includes cab. † Rear 11.00/20. † Rear 10.50/17. † Diameter front 2.343, Center 2.376, Rear 2.406.  
 † Dual Rear Only: Front 8.25/20. † Rear 10.50/17. † Diameter front 2.343, Center 2.376, Rear 2.406.  
 † Auxiliary trans. Spicer 6231B, three forward speeds.

# Cold Horsepower...

## Needs CASITE For Quick Winter Starts



★ Cold weather is Casite weather. Motors cough, wheeze—refuse to start. It takes Casite to get them going.

Even in sub-zero weather, Casite retards congealing of oil . . . lets motors spin over rapidly for quick, battery-saving starts!

Casite also gives better and smoother performance all-year-round in any motor . . . assures more efficient break-in of new motors.

Make sure of smooth, dependable performance. End winter starting troubles before they begin. Put Casite in all your motors now!

For passenger cars and small trucks, a pint in the crankcase every oil change, or every 1000 miles. Also a pint through the carburetor air intake every 3 months. For larger units and diesels, 10% of crankcase capacity.

THE CASITE CORPORATION • HASTINGS, MICHIGAN

### TWO GREAT RADIO SHOWS

"I Deal in Crime" • Saturday nights • ABC  
 "Adventures of Michael Shayne"  
 Tues. Nights • (Wed. nights on West Coast) • MBS

### WHAT CASITE DOES

- Speeds up lubrication on cold starts.
- Retards congealing of oil.
- Gives quick starting even below zero.
- Carries oil to the tight spots.
- Reduces formation of sludge.
- Protects new motors during break-in period.
- Greatly reduces start-up wear.
- Frees sticking valves and rings.
- Gives better and smoother performance, all-year-round.

# CASITE GIVES QUICK STARTING EVEN IN COLDEST WINTER WEATHER

CASITE cleans motors • Keeps motors clean





(Turn to Page 100, Please)





## WHEN THIS WHEEL SPINS...

*it costs sombody money!*

**K**NOW HOW MUCH? You'd be amazed if you did. But it probably doesn't come near the amount that's wasted by wheel-spin on trucks.

Think how costs mount up. There's tire and chain wear, towing charges, wasted time, and excessive wear of axle and differential parts.

Why waste money when you can *save* with a Dapco-NoSpin Differential? You see, it's automatic-locking—engineered to *prevent wheel-spin!*

The Dapco-NoSpin Differential gives full driving power to *both* rear wheels. Even if one wheel loses some traction, the remaining traction—plus all that of the opposite wheel—is available to move the truck. That's because *both* wheels must rotate when power is applied.

You'll find thousands of satisfied truck

owners who agree that these time-tested differentials effect savings they never before thought possible.

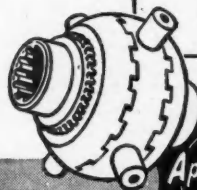
**So DON'T GAMBLE WITH WHEEL-SPIN!** Save time and money with Dapco-NoSpin Differentials. For complete information, call your local Truckstell distributor today. Or write The Truckstell Company, Union Commerce Bldg., Cleveland 14, Ohio.



### "I URGE INSTALLATION IN ALL SCHOOL BUSES."

—Says Le Roy Dable,  
Kiester, Minnesota

"I have had occasion to use my bus—equipped with your differential—under most extreme conditions with far better results than I had ever anticipated. . . . I strongly urge the installation of locking differentials in all school buses for maximum safety and efficiency."



# DAPCO-*NoSpin* DIFFERENTIAL

Mfd. by  
**DETROIT AUTOMOTIVE PRODUCTS CORP.**  
 (Formerly Thornton Tandon Co.)  
 DETROIT, MICHIGAN

# TRUCKSTELL

SPECIALIZED EQUIPMENT FOR PLUS PERFORMANCE



- \* Includes Cab.
- \* Auxiliary transmission, Spicer 8031.
- \* Rear only; Front 12.00/24.
- \* Rear only; Front 11.00/24.
- \* Auxiliary transmission Own FJ.



## FEDERALS HAVE WON *By Costing Less to Run!*



Federal was cited four times for its excellence in war production—building trucks of all types for the Armed Services.

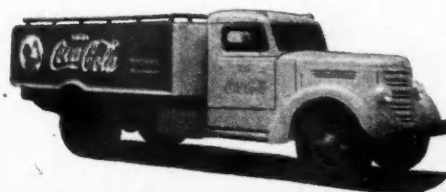
For 36 years Federal has been building trucks that have enjoyed an outstanding reputation for ruggedness, dependability, low upkeep cost, long life and bed-rock operating economy.

Men in a position to judge—fleet owners, maintenance superintendents, service mechanics, dispatchers and drivers—have

learned by keeping comparative cost records, checking lay-up time, servicing and running costs that Federal Trucks have those qualities of endurance, economy and rugged all-truck performance that insure owner satisfaction.

That's why so many truck users now say: "Toss the Tough Jobs to Federal."

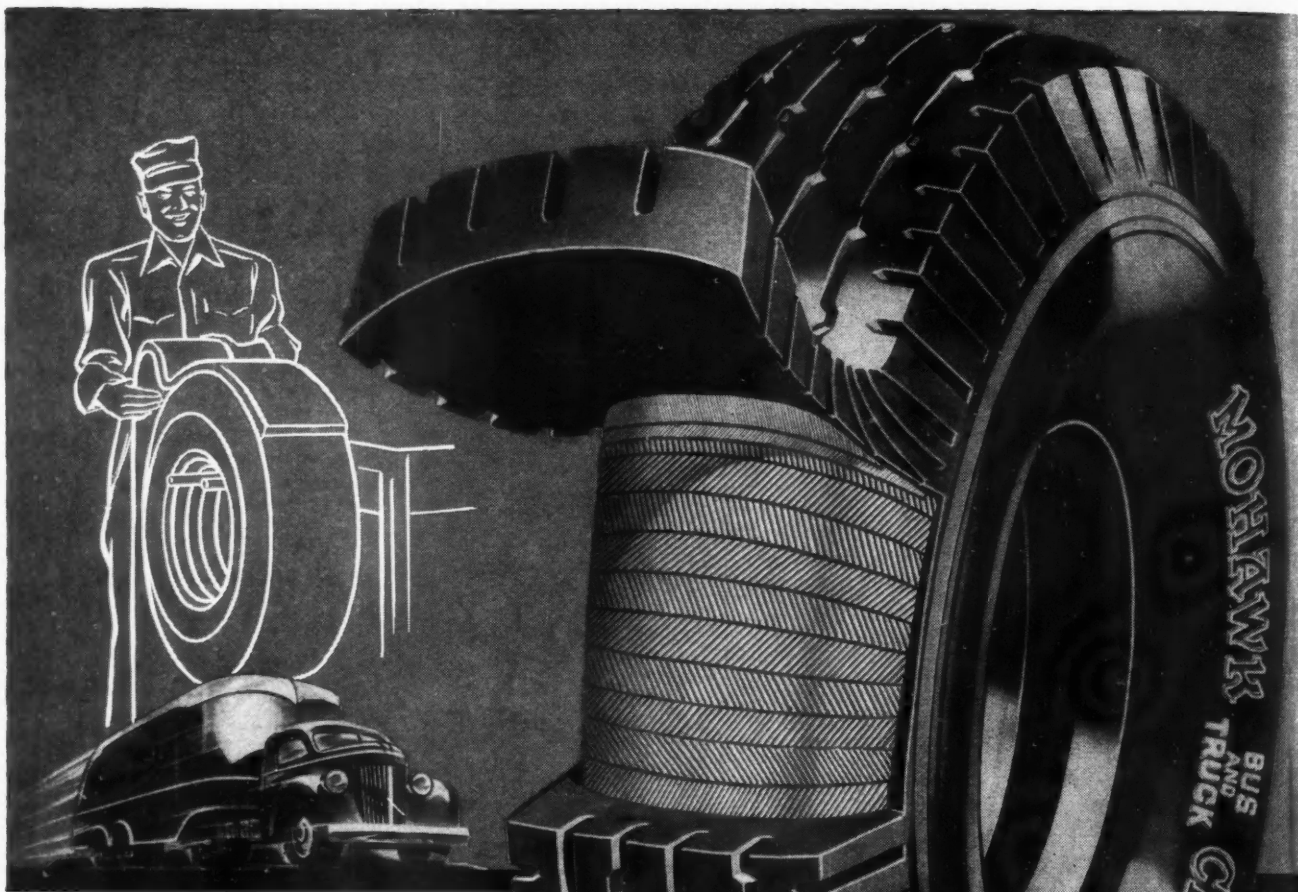
FEDERAL MOTOR TRUCK CO. • DETROIT 9, MICHIGAN



# FEDERAL TRUCKS

Since 1910 ... Known in Every Country—Sold on Every Continent





# *The* Original Tread is Just the Beginning in the Life of a **MOHAWK TIRE**

**T**HE carcass of a Mohawk Tire has been made purposely strong to stand recapping. Since the cost of a recap is only a fraction of that of a new tire, it is apparent that the full and complete life of a Mohawk Tire gives you maximum economy in tire mileage.

**The Mohawk Rubber Co., Akron 5, Ohio**



*...Mohawks Go Farther*

## Overhaul Economy

(CONTINUED FROM PAGE 37)

lieve that this advantage gives us a considerable overhaul cost savings and greatly extends the period between overhauls.

### Steam Cleaning in Use 5 Years

**WE ADDED** a steam cleaning unit to our shop equipment five years ago. This was replaced by a new unit in 1945. Our present steam cleaner is rated at 60 gal. per hr., consists of a diesel fuel oil heating unit, an electrically operated pump and a 10-gal. solution tank.

The full equipment, as installed, cost us around \$1,200.

The unit is located in an open room, 7 ft. wide and 4 ft. deep, which joins our washrack, which is 15 ft. wide and 30 ft. long and extends 17 ft. from floor to ceiling.

In the past five years we have used several different brands of soap with near equal results. At present, we are mixing 1½ lb. of soap powder to 10 gal. of city water. The water is directly connected to the unit under city pressure. Thus, it is continuously converted into steam.



After soaking, block is cleaned with hot pressure hose, dried with air hose

### Cold Tank Cleaning

In conjunction with steam cleaning we use a cold solution tank for engines, transmissions and rear-end parts. This tank, a 5 x 3-ft. covered vat, 46 in. deep (made in our own tin shop) is placed in one corner of the washrack room. We have an overhead hand crane installed at the tank for raising and lowering parts into the solution.

At present we are using a commercial cold cleaning solution which comes in 55-gal. barrels and costs us \$1.85 per gal. The 55-gal. barrel is

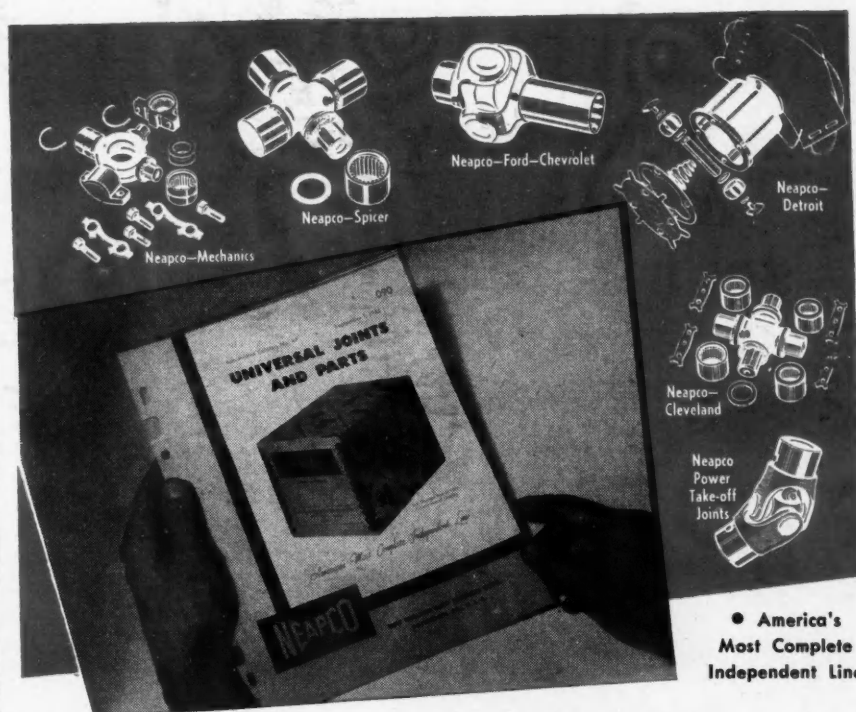
made up of 50 gal. of solution and 5 gal. of water. It takes two barrels to fill our tank, and the 110 gal. of cold solution will provide complete engine transmission and rear-end parts cleaning for 150 truck overhauls.

Parts are left in the tank to soak for 24 hr., then raised and allowed to drain for 1 hr. The parts are then removed to the washrack floor and cleaned with a hot pressure hose at a temperature of 160 deg. F. For drying the parts thus cleaned, we use an air hose.

The after-soaking operation—draining back into the cold solution tank, hot hose cleaning on the washrack floor, and air hose drying—requires approximately 2 hr. per truck unit. Labor and solution cost on this cold cleaning operation is so small that it cannot be considered as an overhaul factor.

### Actual Overhaul Costs

**AS EVERY** maintenance man knows it is hard to arrive at a (TURN TO NEXT PAGE, PLEASE)



## PACKED WITH SALES INFORMATION

To help you satisfy your inquiries quickly and correctly we've packed our new catalogue with all the last-minute specifications that it's possible to assemble. There are pictures of all the Neapco replacements for Ford-, Chevrolet-, Detroit-, Mechanics-, Cleveland- and Spicer-type Joints, clearly cross-indexed with complete Passenger Car and Truck Tables alphabetically arranged for easy reference. It's a one-book source that will satisfy nearly all your Universal Joint calls. It represents "America's Most Complete Independent Line" of Universal Joints and Parts. If you don't have a copy, write us today.



**NEW ENGLAND AUTO PRODUCTS CORP., POTTSTOWN, PA.**

## Overhaul Economy

(CONTINUED FROM PAGE 103)

fair average overhaul cost which can be called *The Average*. The last 20 trucks to receive general overhaul jobs at our shop, all of them classed as old trucks, show an average labor charge per job of \$405.20, and an average material and replacement charge of \$521.07. On the 20 trucks last through the shop for major overhauls, the average time between over-

hauls was 11 months and 26 days. That is, we are running approximately one year between major overhauls jobs and the job, labor and material is costing us around \$925.

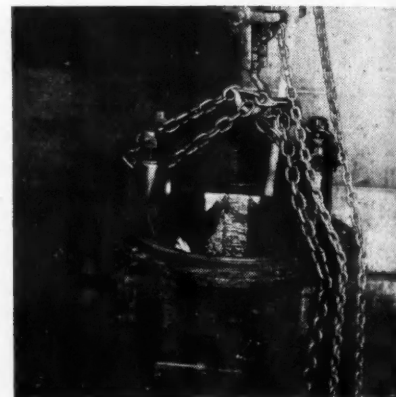
Breaking down the labor and material cost to include all labor and material on the truck for a 12-month period and averaging these costs for the 20 last trucks we get:

12 months' labor per unit . . \$ 888.93  
Parts & material per unit . . 1,051.00

Total labor & material . \$1,939.93

The above total includes every hour of labor and every material charge from the time the truck reaches the steam cleaning washrack until it is back in operation.

From these figures it is evident that the general major overhaul job accounts for about one-half of the total yearly expenditure on the truck for labor parts and material.



Rear end mount is clean after being soaked in cold solution for 24 hours

In 1945, our steam cleaning unit was out of commission for five months. It was during this period that we were able to get a check on the actual time savings of complete steam cleaning.

During this five months' period we found that on an average it took us 24 hr. actual working time to hand-clean the trucks. The trucks were cleaned more or less as they were overhauled and the labor charge ran \$12 per 8 hr. work as against \$9.60, the wages of a cleanup man.

Also, we found that it took us on an average three days' more total time to complete the job—that is, the truck was out of operation three days longer than it had been when we were able to give each unit a complete steam cleaning before overhauls.

We are completely sold on the advantages of 100 per cent steam cleaning before each major overhaul job.

**END**

(Please resume your reading on P. 38)

### LIFEGUARD TUBES AGAIN

Goodyear Tire & Rubber Co. advises that it again is in production of LifeGuard safety tubes for trucks and buses and puncture-sealing tubes in truck and passenger car sizes. For almost five years, production of these products was greatly curtailed.



Call nearest Rowland Distributor. He's supplied by these branches:

**ATLANTA 3, Ga.**, William and Harvey Rowland, Inc., 449 Marietta St., N. W.  
**BIRMINGHAM 3, Ala.**, Birmingham Spring Service, Inc., 2017 Avenue B, South  
**CHICAGO 16, Ill.**, William and Harvey Rowland, Inc., 2732 Indiana Avenue  
**JACKSONVILLE 4, Fla.**, Jacksonville Spring & Alignment Co., 137 Jefferson St.  
**PHILADELPHIA 30, Pa.**, William and Harvey Rowland, Inc., 1414 Fairmount Ave.  
**PITTSBURGH 13, Pa.**, Point Spring Co., 419 Melwood Street

► Taking today's extra burden of bigger loads faster and farther than ever before, fleets equipped with Rowland Springs are coming through with flying colors. But Rowland Springs, or any other make, will serve you better and longer if you have them inspected periodically at a qualified shop—at a Rowland Distributor's. He offers a service that has enabled thousands of fleet operators to increase payload safely, cut down road delays and reduce maintenance costs. Request the name of our distributor nearest you. Wm. & Harvey Rowland, Inc., Frankford, Philadelphia 24, Pa.

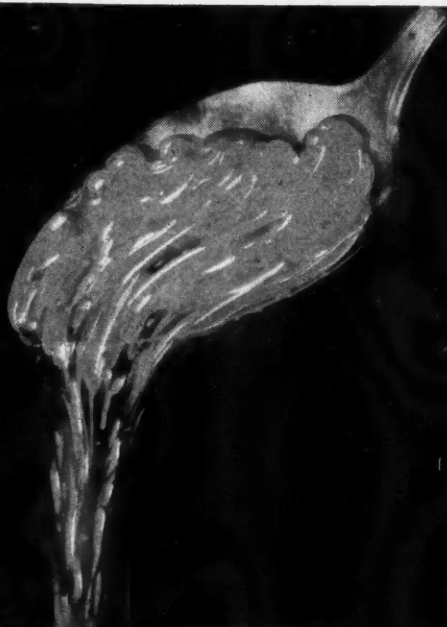
## ROWLAND SPRINGS



**SPRINGS • MUFFLERS**  
**• UNIVERSAL JOINTS •**  
**WHEEL SUSPENSION PARTS**



**FROM  
GREASE THAT FLOWS  
LIKE HONEY**



**To  
GREASE YOU CUT  
LIKE SOAP**



It is a fact that certain Shell greases for high-speed bearings are more fluid than heavy grades of lubricating oil . . . and that other Shell greases are solid "block" lubricants that are sliced up in bricks to be placed in the journals of heavy machinery.

It is also a fact that fluidity is just one of the factors a Shell Lubrication Engineer takes into account when he selects lubricants for your equipment. His stock in trade is a lubri-

cant to meet your every need . . . his function is to select the right one for each job.

From his experience, the Shell Lubrication Engineer can help you when something's wrong and needs quick attention—and he can help prevent trouble by analyzing your equipment right now to see that you are getting the benefit of all that's new in lubrication.

Call him any time. He's a good man to know.



**SHELL OIL COMPANY, Incorporated**

50 West 50th Street, New York 20, New York  
100 Bush Street, San Francisco 6, California



## DRY CHEMICAL FIRE EXTINGUISHERS

WRITE TODAY FOR CHARTS  
SHOWING COMPARATIVE  
RATINGS ON FLAMMABLE  
LIQUID FIRES AS DETERMINED  
BY NATIONALLY RECOG-  
NIZED APPROVAL AGENCY.



# Highest Ratings for Speed and Effectiveness

## WITH THE NEW ANSUL-DUGAS DRY CHEMICAL FIRE EXTINGUISHER

Speedy-fast action is the first essential in preventing major fire damage. The NEW Ansul-Dugas Extinguishers, for Class B and C fires have the highest ratings for SPEED and EFFECTIVENESS, pound for pound, as determined by impartial authority. These highest ratings mean positive put-out of your incipient fires by ANY of your employees.



with Ansul-Dugas Dry Chemical Extinguisher

### FEATURES OF THE NEW ANSUL-DUGAS EXTINGUISHER

- Greatly increased fire-killing power.
- Expert extinguishing by inexperienced operators.
- Simplified—faster operation.
- Quicker, easier, on-the-spot recharge after use.
- Greater fire-fighting effectiveness, pound for pound, dollar for dollar.
- Longer range stream and greater shielding of heat from operator.
- Increased fire-fighting capacity without increased weight.
- Engineered to resist corrosion.

**ANSUL CHEMICAL COMPANY**  
FIRE EXTINGUISHER DIVISION, MARINETTE, WISCONSIN

## Spot Checking Costs Cuts Paper Work

(CONTINUED FROM PAGE 39)

To solve these two difficulties with a minimum of paper work was our objective at the beginning of 1946. Now, after a year of operation we believe that our compromise solution is not only unique, but highly successful. It consists basically, of spot checking, by means of accurate and total cost figures, a substantial cross-section of the fleet.

### Typical Vehicles "Spotted"

THERE are three basic types of vehicles in the total fleet—retailers, wholesalers and heavy-duty tractors for bulk hauls. As there are but 90 tractors operating from a single headquarters garage and three secondary garages, and 450 wholesalers operating from four garages, we decided to include all of these vehicles. Then, to cover our 1300 retail trucks and 150 passenger cars, we selected two more garages which were operating sufficient numbers of each type and make used by the entire fleet to give a good cross-section picture. The bookkeeping was further simplified by the fact that some of the garages selected operated more than one type of vehicle.

Thus, we end up with a total of only seven branch garages keeping complete cost records, compared with 28 under the pre-war plan. About 850 vehicles are covered by the plan, comprising roughly 50 per cent of the total fleet. Yet from these we believe we can obtain sufficient records to meet both the shortcomings enumerated above and to furnish all comparative data needed to exercise sound judgment in vehicle selection and replacement.

### Four Forms Devised

WE WERE still determined to hold our paper work to the simplest minimum. Accordingly, the four forms illustrated were devised. The system begins with the "Auto Service and Repair Ticket" (Fig. 1) which follows the conventional pattern of a job ticket. Column 2, the job classification number, is coded merely as a guide in utilizing the next form described below. Cost of materials include only definitive

(TURN TO PAGE 108, PLEASE)



**for over a quarter-century  
THE OUTSTANDING NAME  
IN TRAILER QUALITY**

**H**IGHWAY Truck Trailers have progressively represented all that is best in trailer manufacture, since the pioneer days of motor transport. For bedrock quality, for sound engineering experience, for easy handling, low ton-mile cost and extra years of dependable service, the Highway name is your sure guide to trailer value.

Highway "Freightmasters" and "Clippers," new Highway Warehouseman's Van, Highway Platform Trailers and Semi-Trailers, all are building good will wherever motor transport costs are figured closely. These products are *manufactured* in Highway's own modern factories, rather than being merely assembled. As part of this manufacturing operation, Highway operates its own foundry, forge and machine shops.

Write today for color booklets detailing Highway's many points of superiority. When you learn about all the advantages engineered into Highway Trailers, you will understand why it pays to "let your next trailers be Highways."

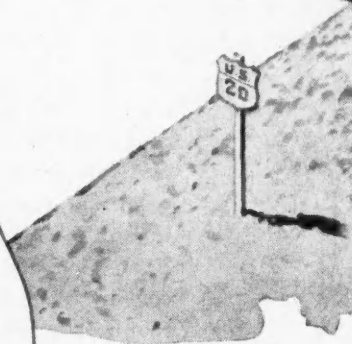
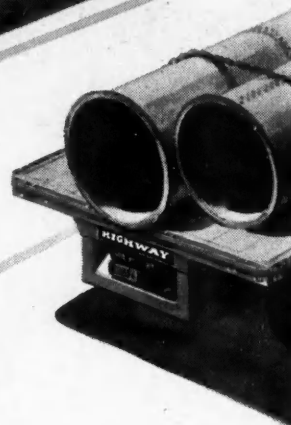
**HIGHWAY TRAILER COMPANY**

General Offices: Edgerton, Wisconsin

Factories at: Edgerton, Wis. • Stoughton, Wis. • Farmingdale L.I., N.Y.

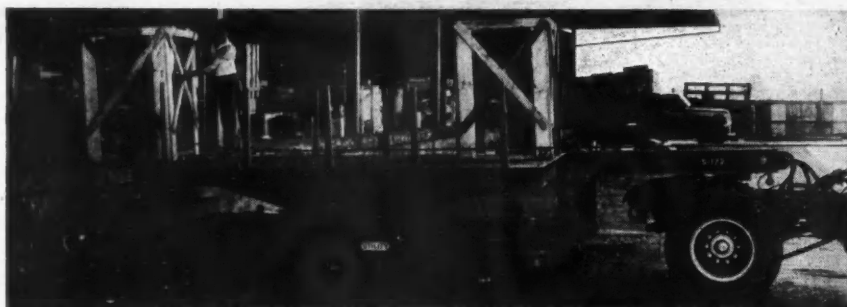
Commercial Truck Trailers • Earth Boring Machines

Winches and other Public Utility Equipment



*On Every*  *Highway*

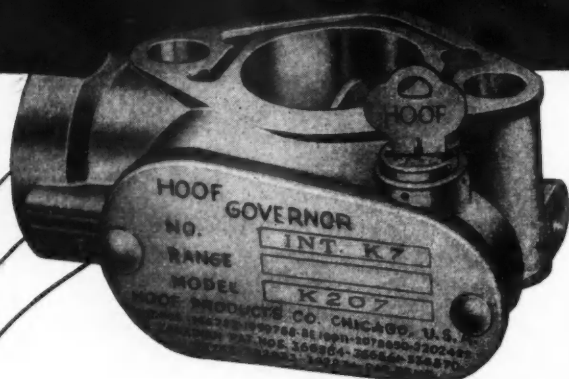




Utility Trailer Co., Los Angeles, recently announced this low-bed semi-trailer fitted with hydraulic lift similar to dump truck equipment. It permits easy loading of heavy machinery at either sidewalk or platform levels

# HOOF Governors

SAVE MORE MONEY  
FOR YOU TODAY THAN  
EVER BEFORE



To survive rising material and labor prices, each operator must analyze each operation for every available means of decreasing operating expenses.

A few cents here and a few cents there will result in surprising savings. Thousands of operators take advantage of a "few cents here and a few cents there" by using Hoof Governors. Controlled operation, with its automatic savings, offsets the cost of the governor within a period of four to six weeks . . . frequently less. You can hardly afford to operate without this protection.

Send for new catalog . . . discover how much you save at so low a cost.

KEY and SEAL TYPE GOVERNORS AVAILABLE FOR IMMEDIATE DELIVERY  
HOOF PRODUCTS CO., 6543 S. Laramie Ave., Chicago 38, Ill.



**GOVERNORS SET THE PACE**

## Spot Checking Costs Cuts Paper Work

(CONTINUED FROM PAGE 106)

parts, does not include miscellaneous items such as nuts, bolts, gasket cement, etc., which are pro-rated from the overall figure for the unit. This record is approved daily by foreman or mechanic in charge.

The "Auto Service and Repair Record" (Fig. 2) provides an individual record for each vehicle on a daily basis. Entries are transcribed from the job ticket at the end of each day's activity and are classified according to the code numbers indicated at the top of the various columns. Blanks provide for additional listing which may be either seasonal or peculiar to a particular operation.

The last step at the garage level is the monthly compilation of the "Auto Service and Repair Shop Report" (Fig. 3). It is prepared by the local office staff. One of its most important features is the fact that all vehicles of a given make and type are grouped and appear in the same order each month. This provides an instantaneous method of comparing individual units of a given make and type and also permits ready transfer of the data for recapitulation at headquarters.

Our final form, prepared by the central accounting department is the "Monthly Vehicle Report" (Fig. 4). On this, totals for each group of vehicles of a given make, type and tonnage and at a given location, are entered as a single unit. For instance, the first entry might be headed "Riverside Wholesale" under which would be listed "Make A, 1½-ton, 32," meaning that there were 32 vehicles of this particular make and type at that garage. The subsequent figures would then be the total for that group. It will be noted that "Non-controllable expense" or fixed overhead is added here for the first time since all items in this category are available at the headquarters office. These items include vehicle licenses, taxes, etc. which are taken from actual records for each vehicle and rent, overhead personnel, etc., which are pro-rated to the particular branch garage total. The resulting totals in the extreme right column show complete cost for the operation

(TURN TO PAGE 110, PLEASE)

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at church."

Page 104)



"STEERING WOBBLIES" crawl into your tires through bumps and scrapes like this one. Whatever the way your wheels get out of alinement or unbalanced, you pay the price in excessive tire wear, worn steering parts, bad steering, blowout and ACCIDENT! Tire savings alone pay for Bear Safety Service... so make sure you're rid of Steering Wobblies... stop in for tests at the BEAR SIGN.



Published in the interest of public safety and Bear Service Shops by Bear Mfg. Co., Rock Island, Illinois. Leading makers of Safety Test and Correction Equipment.

**WITH BEAR SAFETY SERVICE**  
YOU CAN THANK YOUR REPAIR MAN FOR THE  
ACCIDENT THAT DIDN'T HAPPEN!

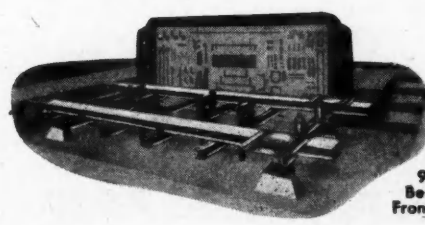
# Rising COSTS-PER-MILE

— Make this Bear Money-Saving Message from the **POST** more important than ever before for FLEET OPERATORS

Bear Service always has been a big cost-reducer for Fleets. Under today's conditions, with cars and trucks overage, with synthetic tires and recaps, it's easier than ever for the Steering "Wobblies" to crawl in and do their damaging, dangerous, costly destruction. Stop

'em FAST with Bear Safety Service by making arrangements with a shop that displays the Bear Sign... or by installing Bear Equipment in your own shop. Then watch that cost-per-mile go DOWN... Down... down. Write BEAR MFG. CO., Dept. C-3, Rock Island, Illinois.

Bear Heavy-Duty Dy-Namic Wheel Balancer



900-830 Bear Heavy-Duty Front End and Frame Service

Bear Alinement Tester



## Spot Checking Costs Cuts Paper Work

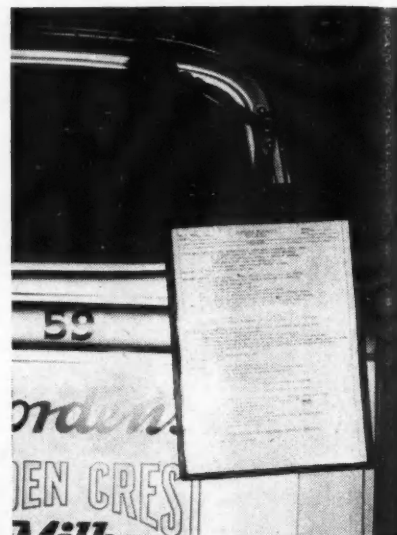
(CONTINUED FROM PAGE 108)

of all groups of vehicles of the same make and type.

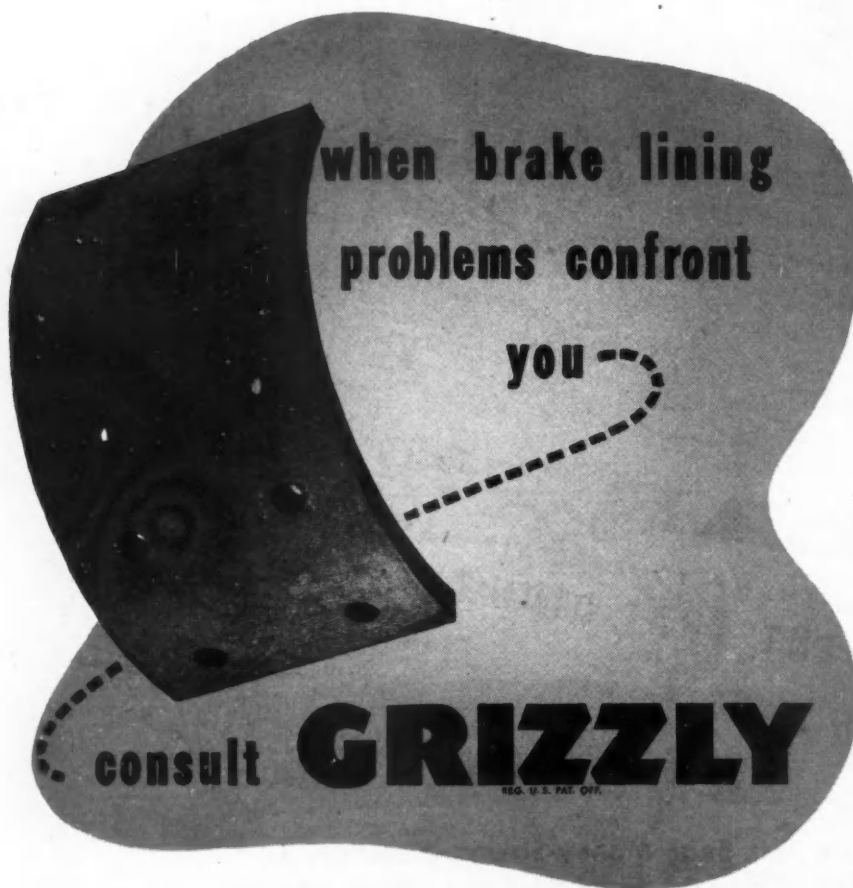
It will also be noted that this is a three-purpose form permitting group representation of either total cost, cost per vehicle per day, or cost per vehicle per mile. The last two are derived from the first by purely mathematical calculations plus the addition of our regular mileage re-

ports. Whichever way the three-way form is used, a simple check mark in the space provided at the top gives an immediate key. All three provide definitely useful information, and enough information, we now believe, to warrant continued operation of this greatly simplified plan.

Meanwhile, gas, oil and mileage reports on all vehicles are continued with a final recapitulation, arranged on a form very similar to the one just described to show the group totals.



Blown-up PM form hangs on truck cab, guides service checks



For over thirty years, leading service managers and fleet owners have relied on Grizzly to provide fast, practical solutions to countless brake lining problems. Constant laboratory research, alertness to new developments and invaluable experience gained in over thirty years' manufacturing experience,

place Grizzly in an excellent position to solve brake lining problems of widely divergent natures.

The next time you are faced with a brake lining problem, bring it to Grizzly—one of the largest, most dependable producers of fine brake lining for both automotive and industrial fields.

There's a Grizzly Distributor near you—call him today!

"Bear in Mind". . . ask for

**GRIZZLY**  
REG. U.S. PAT. OFF.  
**BRAKE LINING**



### Other PM Aids

OF COURSE, we have other features in our control system but they are beyond the scope of this article. Just a parting word on the subject of our blown-up PM form, shown in the accompanying illustration. Still on the march to reduce paper work, we do not ask the mechanic to check a single item. But we do ask and expect him to virtually memorize the detailed steps in proper sequence and as a reminder we hang the big form, measuring 13 x 18 in., on the radiator of each vehicle being checked. The mechanic reports to his immediate supervisor any repairs found necessary, such as carbon and valves, brake reline etc., on a small paper form provided him each time a PM operation is made. The foreman or mechanic in charge then arranges to complete work while truck is in the shop or schedules it for a later date.

END

(Please resume your reading on P. 40)



These Internationals, complete with power lift tail gates and exceptionally attractive paint jobs, were added recently to fleet of Seattle's Associated Grocers Co-Op to service organization's 500 "Surfine" stores



# New Britain HAND TOOLS

## ONE LINE COMPLETE FROM A TO Z



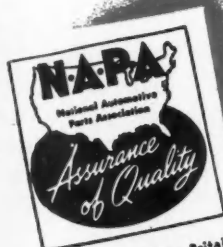
HIGH SPEED DRILL SET  
MSD-1160

From Adjustable Wrenches to Zerk Fitting Tools . . . here's the *complete* Line of Mechanics' Hand Tools that fits you for every fleet maintenance job. It's the New Britain Line of guar-

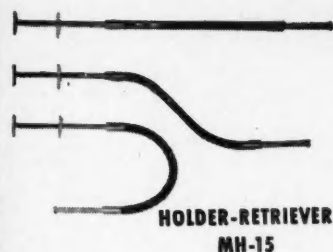
anteed performance — a widely varied stock of Hand Tools, standard and special, to help make easy work out of hard work.

You may be working on Motor, Body, Ignition, Brakes, Tires, Cooling System—no matter what the job on truck or bus—you'll find just about any Hand Tool you'll ever need in this one, great Line.

You're sure of highest quality in each New Britain Tool you buy . . . these famous Sockets, Speeders, Ratchets and Wrench Sets have earned a solid reputation for Greater Strength—Better Fit. Get to know this good source of dependable Hand Tools . . . ask your NAPA Jobber to show you the *complete* New Britain Line TODAY! The New Britain Machine Co., New Britain, Conn.



The complete New Britain Line for Automotive, Aircraft, General Maintenance & Production Needs is sold by leading Jobbers.



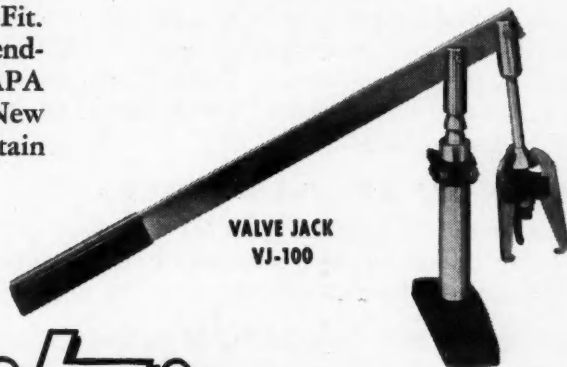
HOLDER-RETRIEVER  
MH-15



WRENCH SET  
6033



CYLINDER RIDGE  
REAMER R-173



VALVE JACK  
VJ-100

# New Britain

GREATER STRENGTH • BETTER FIT **HAND TOOLS**

# Only WARNER ELECTRIC BRAKES

Give you *all* these  
Time-and-Money-Saving Advantages

## Engineered to meet the Specific Needs of Trailer Braking

**SIMPLICITY** — No other brakes equal Warner Electric Brakes for simplicity of design and construction. Full clearance under tractor and trailer. Nothing to get knocked off, leak, chatter or freeze. No exposed braking equipment . . . no rods to rattle . . . no tubes to split . . . no troublesome boosters and connections. Easy to install . . . no tapping of manifolds . . . no expensive motor work.

**INSTANTANEOUS, POSITIVE ACTION** — Positive-acting braking power is developed within the brake itself. Because the braking mechanism is *electrically controlled*, there is no time lag. Regardless of distances from cab to rear trailer wheels, any amount of stopping power is *instantly available*.

**CONTROLLED BRAKING POWER** — Driver can pre-set the "Vari-Load" dial on dash so it adjusts the electric brakes on the trailer to give correct braking to meet road and load conditions.

**SYNCHRONIZED OPERATION WITH EITHER AIR OR HYDRAULIC SYSTEMS** — Warner Controller synchronizes hydraulic or air brakes on tractor with Electric Brakes on trailer. Regular tractor foot pedal then operates both systems *together*.

**ALL-PURPOSE CONNECTION** — One rugged Electrical Cable Connection provides contacts for Brakes, Running and Parking Lights, Stop and Turn Signals—ALL electrical contacts. As easy to plug in as a radio.

**UNMATCHED ECONOMY** — Warner Electric Brakes are inexpensive to install due to their simplicity. Use only as much current as tail light. The most important economy factor is that they require minimum of servicing thus preventing costly delays and tie-ups of trailer equipment.

**PROVED DEPENDABILITY** — Warner Electric Brakes have been performance-proved by leading tractor-trailer fleet operators during many years of efficient, trouble-free service — also on thousands of military vehicles. It is noteworthy that 80% of all power-brake equipped trailing vehicles purchased by the government during World War II — had Warner equipment.

**GREATER SAFETY** — When both the tractor and trailer are equipped with Warner Electric Brakes their *instant* "stopping power" under *absolute control* assures greater safety. All brakes "come in" at the same time, but with various *amounts* of power. Therefore, rear trailer wheels get the effect of coming in first — and the tendency to skid or jack-knife is prevented, thus giving protection to driver and load — and avoiding costly repairs and tie-ups of equipment.

Specify WARNER ELECTRIC BRAKES on all future trailer purchases. Write for illustrated literature explaining all their advantages.

**WARNER ELECTRIC BRAKE MFG. COMPANY**  
BELOIT, WISCONSIN

*Specialists in the manufacture of Electric Trailer Brakes since 1927*



The Warner Electric Brake is a simple mechanical brake, operated by an electro-magnet and armature disc. Each wheel is a complete brake unit. The braking power is generated within the brake itself. A wire to the battery and a controller complete the system — famous for its simplicity.



"Vari-Load" dial on dash for pre-setting correct braking power.

Controller operates trailer's electric brakes in unison with truck's hydraulic or air brakes.

# WARNER

## ELECTRIC BRAKES





**EXTRA GRIP...**  
*and more!*

## McKAY Multi-Grip TIRE CHAINS

Look for the Exclusive  
"HARD-TO-WEAR-OUT"  
MULTI-GRIP LINKS



**Double Traction-Bars**  
INCREASE EFFICIENCY  
GIVE MORE TRACTION AREA  
MAKE CHAINS LAST LONGER

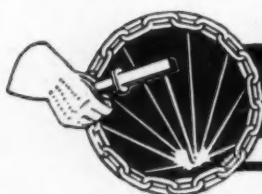
When ice and snow clog the highways, that's when McKay Multi-Grip Tire Chains prove themselves in performance.

The welded-link construction, the double traction-bar design, the hard-to-wear-out case-hardened links, the easy-to-put-on Klip-Lock fastener assure longer wear, added traction, and plus protection under all road conditions.

Before you equip your trucks and cars, check the many advantages of McKay Multi-Grip Chains. Note the high road efficiency, the low "per-mile" operating costs and the added convenience McKay Multi-Grips offer you.

This year, more than ever, it more than pays to use McKay Multi-Grip Tire Chains. Cars are still hard to get... protect yours with Multi-Grips.

**"Klip-Lock" Fastener Makes McKay Chains "Easy-to-Put-On"**



DISTRIBUTED THROUGH BETTER AUTOMOTIVE JOBBERS

**THE McKAY COMPANY**  
PITTSBURGH 22, PA.

WELDING ELECTRODES... COMMERCIAL CHAINS... TIRE CHAINS

GENERAL SALES OFFICES • YORK, PA.

## Tire Economy

(CONTINUED FROM PAGE 42)

We keep a graphic record of the four tire service classifications discussed on a chart such as shown in Fig. 1. The periods shown average about eight weeks each. Each period for 1945 covers an identical period for 1946. The actual percentages for the four classifications for 1945 are:

| Period | Under-<br>or Over-<br>Inflated<br>(Budget:<br>8.5%) | Mismatched<br>Duals<br>(Budget:<br>7.0%) | Mechanical<br>Irregularities<br>(Budget:<br>6.5%) | Tire<br>Service<br>(Budget:<br>3.0%) |
|--------|---|--|---|--------------------------------------|
| 1945   |   |  |   |                                      |
| 1      | 23.8  | 29.8                                     | 21.6  | 8.5                                  |
| 2      | 17.5  | 19.2                                     | 9.1   | 6.3                                  |
| 3      | 15.0  | 9.2                                      | 7.7   | 4.5                                  |
| 4      | 10.5  | 11.7                                     | 11.1  | 3.4                                  |
| 5      | 15.7  | 11.1                                     | 14.5  | 4.6                                  |

Keeping such records, especially in such graphic form as shown in Fig. 1, has proved profitable. With such figures staring at us, we naturally keep driving to keep within the budget. Improvement for 1946 is shown both on the graph and in the following actual figures for the same five periods:

| Period | Under-<br>or Over-<br>Inflated<br>(Budget:<br>8.5%) | Mismatched<br>Duals<br>(Budget:<br>7.0%) | Mechanical<br>Irregularities<br>(Budget:<br>6.5%) | Tire<br>Service<br>(Budget:<br>3.0%) |
|--------|---|--|---|--------------------------------------|
| 1946   |   |  |   |                                      |
| 1      | 12.1  | 8.4                                      | 9.6   | 2.7                                  |
| 2      | 12.3  | 6.4                                      | 14.4  | 2.5                                  |
| 3      | 9.6   | 9.3                                      | 10.5  | 1.7                                  |
| 4      | 9.7   | 7.9                                      | 9.3   | 1.8                                  |
| 5      | 8.7   | 4.1                                      | 7.4   | 0.6                                  |

### New Tires Go on Front Wheels

WE APPLY all new tires to the front ends of our power units. Here they run a break-in period of from 5000 to 10,000 miles. It gives them a chance to get their growth, stretch and form. At the end of the break-in period we remove them and properly mate with the most worn of the duals on the power unit.

Duals are matched by measuring with circumference bands and we allow a tolerance of from one-half inch to an inch and a half.

All casings with sectional repairs are placed on dual positions on trailers with the repaired tire on the inside so that the repaired section will have the lateral support of the other tire.

Individual records are kept for each tire. Our year is divided into 13 four-week periods instead of 12 (TURN TO PAGE 116, PLEASE)

# Soft pressure does it . . .

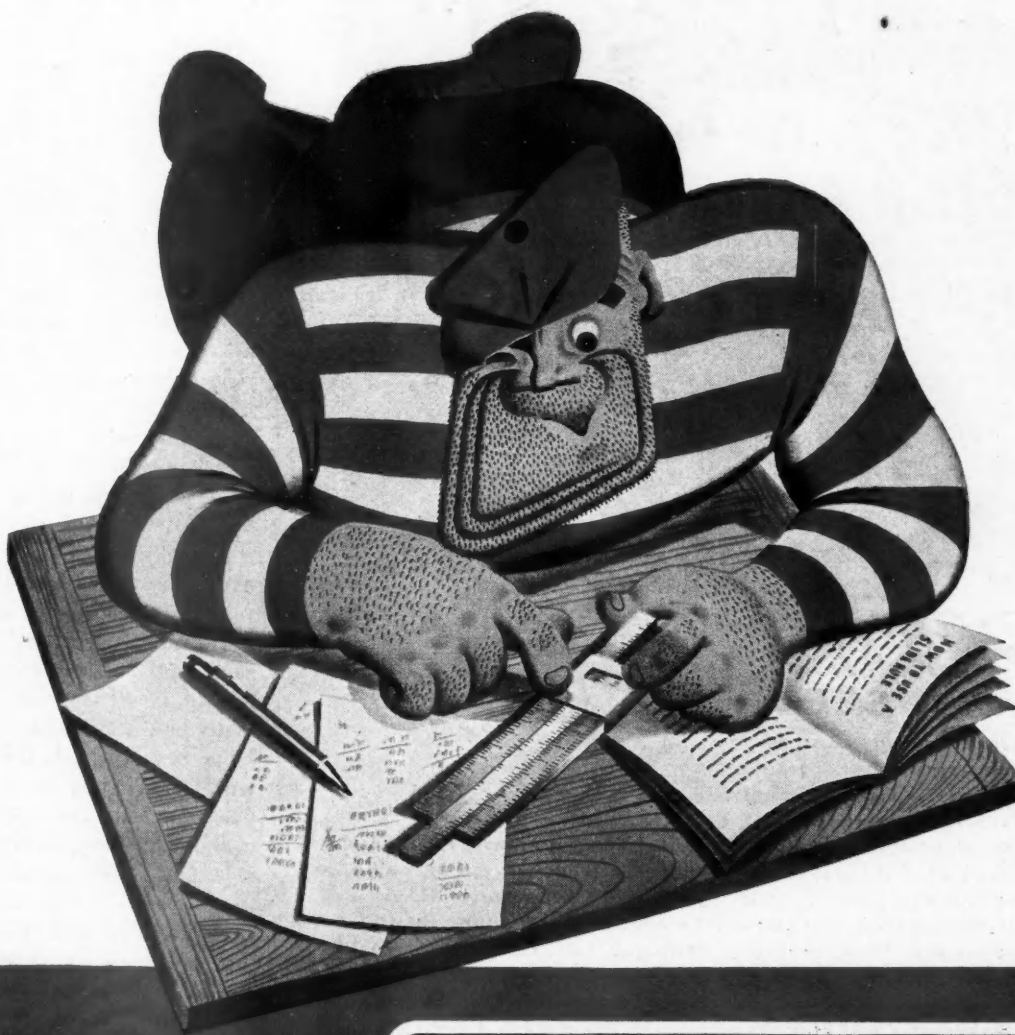
The tougher they are the more they need *soft pressure*. The worst oil-pumpers yield to the soft, scientific pressures used in Hastings Steel-Vents. And a long life is insured for such jobs, too.

For satisfying performance and long life, you can bank on Steel-Vents in any cylinder condition—rebore, resleeve, re-ring.

## SOFT PRESSURE DOES IT—IN REBORES, TOO

*Soft pressure* has been doing it for 5 years in this fleet of 1200 bakery trucks: "We have been using Hastings Steel-Vent rings in our fleet and find that they are doing an excellent job in both rebore and re-ring jobs. Cylinder wall wear, in most cases, is less than the wear with original rings."

HASTINGS MANUFACTURING COMPANY • HASTINGS, MICHIGAN  
Hastings Ltd., Toronto



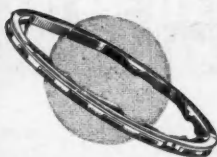
### TWO GREAT RADIO SHOWS

"I DEAL IN CRIME" • Saturday nights • ABC

"ADVENTURES OF MICHAEL SHAYNE" •

Tue. nights (Wed. nights on West Coast) • MBS

## HASTINGS STEEL-VENT PISTON RINGS



TOUGH ON OIL-PUMPING GENTLE ON CYLINDER WALLS

## Tire Economy

(CONTINUED FROM PAGE 114)

months and our individual tire cost cards are coordinated with this time division.

Each tire is branded with a number containing six or seven digits. For instance, a tire might be branded thus: 4-10-187-6. The digit 4 represents the name of the manufacturer; 10 represents the tire size,

which is 10:00-20; 187 is our own number, representing it to be the 187th 10:00-20 tire of a certain make purchased by us; and the number 6 stands for 1946. After being recapped, the letter T is added to the original number; successive recaps get additional Ts. Thus, the number TTT-4-10-187-6 shows that the above tire was recapped three times. Incidentally, when a tire goes to the recap shop, a new record card, showing it is a recap, is made out for its next

service period. This procedure is carried out for every subsequent recap.

With this numbering method we can examine a tire anywhere on the system on any unit and immediately know the number of recaps, its age, without referring to our office records. It simplifies decisions. If the question of disposal of some tire comes up at an outlying terminal, you can't always get to the card system and find its history. So if its branded number indicates that it has had the required number of recaps and that it has been in service too long, it may be dangerously near the end of its life.

### Other Tire Records

OUR other tire records consist of a Tire Inventory Record, Fig. 2, which gives the full history of every tire used by the fleet; a Daily Tire Summary, Fig. 3, which is a simple control of tires taken in and out of inventory; the Tire Cost Record, Fig. 4, which is the individual tire record on which all pertinent facts about the individual tire are given in full detail, even to repair costs and guaranteed minimum mileage.

The data on this card should be self-explanatory except, perhaps, for the rows of figures appearing at the top. At present, these figures are not in use. However, the purpose of these numbers is to indicate 13 periods of 28 days each. A tab system is used with these numbers. Now that our mileage guarantee is coming back, this system again will go into effect.

This is how it is used: When a new tire is placed on the front end of a vehicle, in accordance with our break-in mileage system, and is due to run, say, 5000 miles in this position, the tab will be set forward to the approximate date when these 5000 miles will be accumulated. At that time the tire will be switched to a power wheel position. The same method is used to indicate change from inside to outside, and from tractor to trailer position.

It might be well to mention, also, that we make a definite effort to eliminate the human element as much as possible. We don't want to leave any of the tire chores to chance or to the whim of any individual. You can't guess or put off record-keeping and routine inspections until tomorrow and get good results. The operations setup for record keeping and

(TURN TO PAGE 118, PLEASE)



Here's *positive* protection against dropping a trailer; sure and easy operation under *all* conditions, in *all* positions; stamina that stands up—*stays* safe.

Jaws, lock, plate, and brackets are exclusive designs proved and approved both on the highways and off. Cast-steel to cast-steel contacts—*not* pins—take pull and pressure. Exclusive three-way locking *tells you* when it's locked. Largest bearing area—by far—of any 5th wheel makes jaws and king-pins

*both* last longer. Shims keep jaws tight.

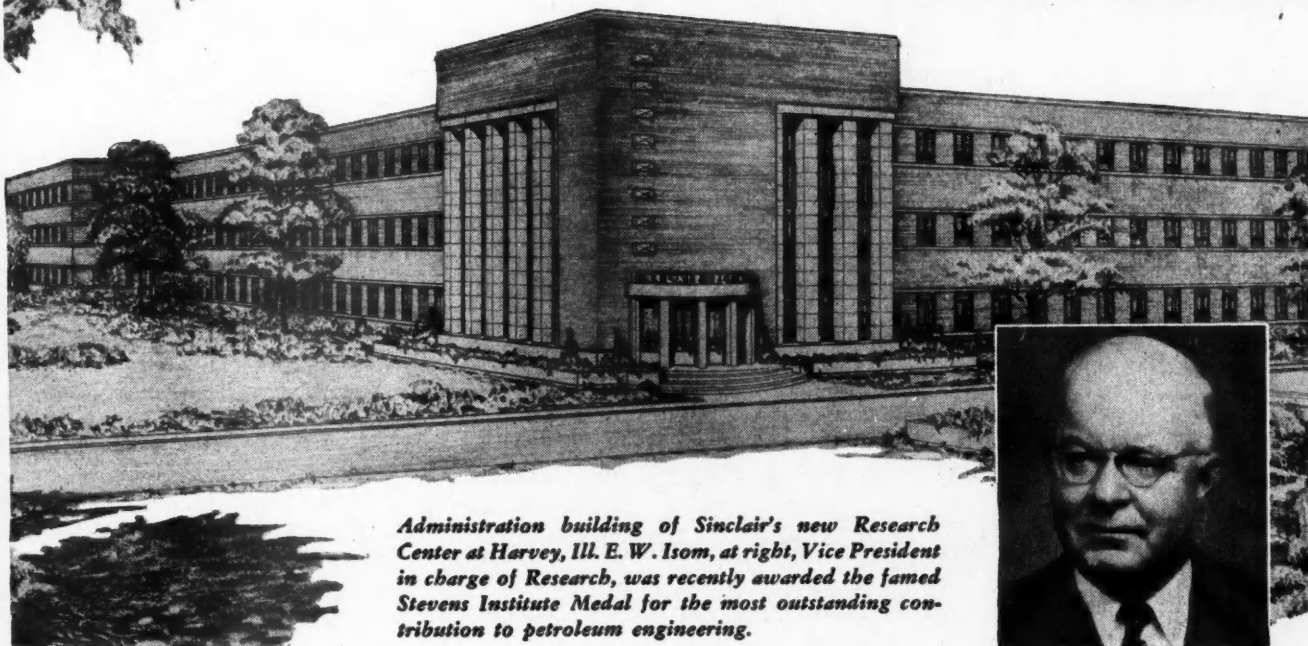
Built in types and sizes for all purposes by the Automotive Division of American Steel Foundries, 400 N. Michigan Ave., Chicago 11, world's largest producers of cast steel for transportation purposes. Distributors from coast to coast. *Write today.*

**A.S.F. Safety 5th WHEEL**



# Outstanding Ability

... to solve your lubrication problems



Administration building of Sinclair's new Research Center at Harvey, Ill. E. W. Isom, at right, Vice President in charge of Research, was recently awarded the famed Stevens Institute Medal for the most outstanding contribution to petroleum engineering.

Sinclair is completing a new \$4,000,000 petroleum research and development laboratory at Harvey, Ill. This great research center — to be the most modern and best equipped in the industry — climaxes more than 30 years of consistent achievement in the development of superior products for the solution of your most difficult lubrication problems.

The outstanding skill and vast technical knowledge of recognized experts in the petroleum field will continue to serve you at Harvey as they have for so many years at East Chicago.

For tested, proven lubricants... *designed by special research for specific industrial application... rely on Research-Wise Sinclair.*

## *Sinclair Automotive Lubricants*

For Engines:

**OPALINE MOTOR OIL**  
**OPALINE TBT MOTOR OIL**

(For severe service)

**TENOL** (Heavy Duty — For Diesels)

For Gears:

**OPALINE GEAR LUBRICANTS**

For Chassis:

**OPALINE CHASSIS LUBRICANT**

For Wheel Bearings:

**SINCOLUBE**

SINCLAIR REFINING COMPANY • 630 FIFTH AVENUE, NEW YORK 20, N. Y.

# SINCLAIR

## *Lubricants for Industry*

FINEST CRUDES + EXPERT RESEARCH

and MANUFACTURING CONTROL = OUTSTANDING PERFORMANCE

## Tire Economy

(CONTINUED FROM PAGE 116)

tire maintenance must be constant, regular and exactly according to the "book." Any other kind of figures are of no value in beating down costs. Unless the procedure laid down is closely followed, the value of comparing one set of figures with another is considerably lessened.

Our mileage records are computed

from point to point and our trucks traverse only authorized point-to-point routes. We do not use speedometer readings.

The bulk of our tire stock is kept in Louisville and tires are shipped out on order to other terminals in the system. Some of our smaller terminals where our man may have other duties and a minimum amount of time for each duty, in order to preserve our high mileage records, we must do more ourselves for this man.



## Livestock Haulers Like FABCO DUAL DRIVES

Livestock haulers need equipment which has plenty of power and traction off the highway, plus power and speed on the pavement. They haul cattle from feedlots and pastures direct to the packing houses, from pastures to pastures, from pastures to feedlots, from mountain ranges to railroad shipping points. FABCO DUAL DRIVES on medium duty trucks give them double the normal traction and full use of engine power through additional gear ratios. The illustration above shows how Carl Campbell of Winterset, Iowa, does the job with a Ford equipped with Fabco Dual Drive and an 18' cattle body. Write for a copy of the FABCO DUAL DRIVE bulletin.

27 Years in this Business

**Fabco**

**F. A. B. MANUFACTURING CO.**

1249 SIXTY-SEVENTH STREET - OAKLAND 8, CALIFORNIA

Dual Drives - 6 and 10 Wheel Units - Logging and Highway Trailers - Frame Extensions

## Duals Pre-Mated

AS AN example, we pre-match duals when we ship them out. Each tire in a pre-matched set of duals is tagged with a yellow tag, Fig. 5, wired to the valve stem telling exactly where the tire is to be placed.

Duals in pre-matched sets are marked "O" for outside mounting and "I" for inside mounting. This practice of sending matched duals to outside terminals has simplified their work and has saved us damage from guess-matching.

When pre-matched duals are used, the tags are removed and attached to the tires which were removed, in exactly the same order. These tires are shipped back to us and we check the tags with the records and if there has been any mistake in the way the tires were mounted, we can catch it before many miles have been traveled.

## Tire Loads Balanced

THE fourth classification in our full tire service program is "Mechanical Factors That Enter Into the Life of the Tire." Pre-eminently important in this classification is the matter of loading.

From factory specifications and distribution formulas on each series of trailers, we determine the maximum load per unit and recommend this load to the operating department. Important also is the matter of a balanced load so that each wheel carries its share.

We then follow a program of periodically checking loads by weighing, using a conventional scale under each wheel. Findings are recorded on Overload and/or Distribution Report, Fig. 6. If we find an overloaded unit, it is knocked down and the unit does not roll until load is corrected.

Loading specifications are published by the operating department in its regular bulletin and everyone concerned knows what correct loading figures are. It is the constant aim to correct conditions before damage results.

## Overall Performance Picture

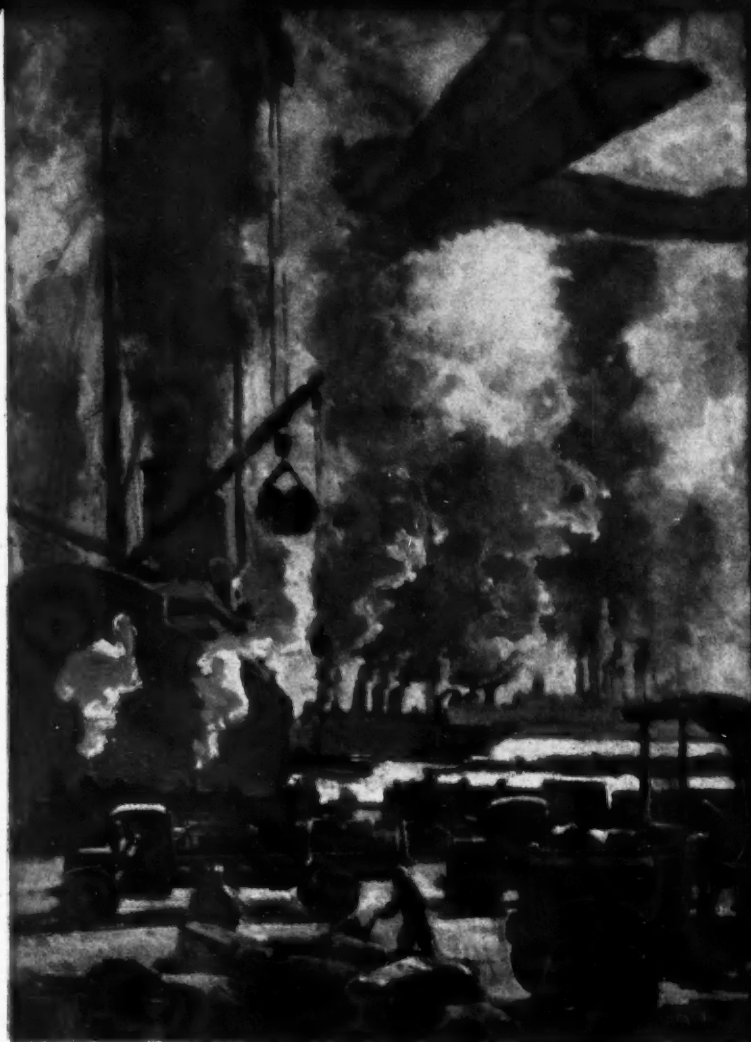
ALL our records and all our work lead to a breakdown of figures from which the entire tire picture can be seen.

From this record we get cost per mile of all tires in the four groups just discussed: Original tires going out of (TURN TO PAGE 121, PLEASE)

# The Spirit of Transportation"

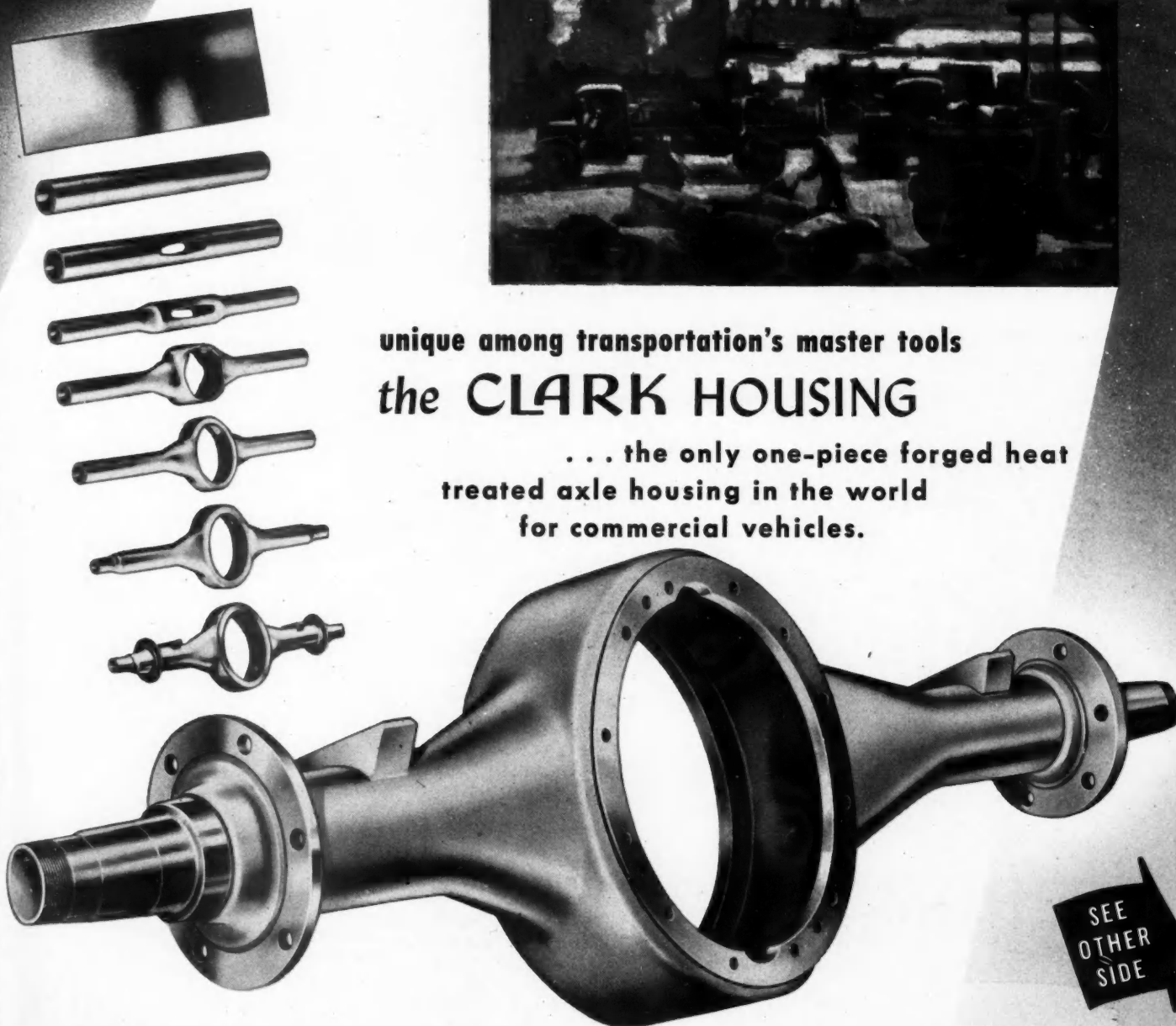
by  
JONAS LIE

from the collection of twelve  
original interpretations for  
Clark Equipment Company  
by leading American artists.



## unique among transportation's master tools the CLARK HOUSING

... the only one-piece forged heat  
treated axle housing in the world  
for commercial vehicles.

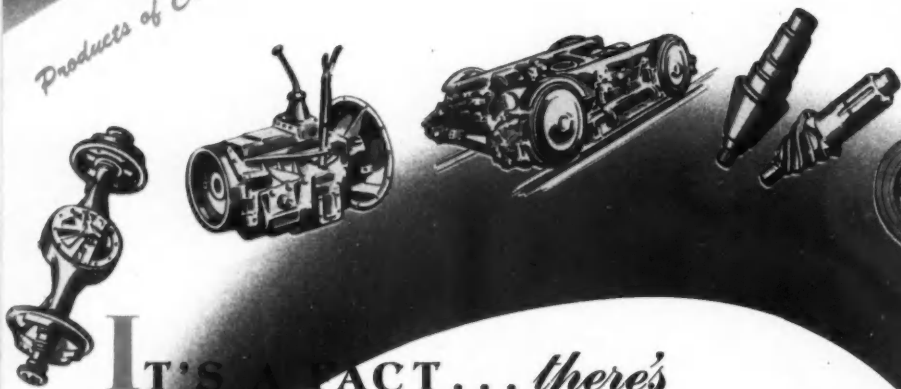


SEE  
OTHER  
SIDE

ANOTHER PRODUCT OF CLARK EQUIPMENT COMPANY



Products of Clark - RAILWAY CAR TRUCKS • AXLE HOUSINGS • FRONT AND REAR AXLES FOR TRUCKS AND BUSES • EASY ROLL TRAILER AXLE • TRANSMISSIONS • INDUSTRIAL TRUCKS AND TRACTORS • METAL SPOKE WHEELS • BOOSTER UNITS • BLIND RIVETING PROCESS • DRILLS AND REAMERS • GEARS AND FORGINGS • ELECTRIC STEEL CASTINGS

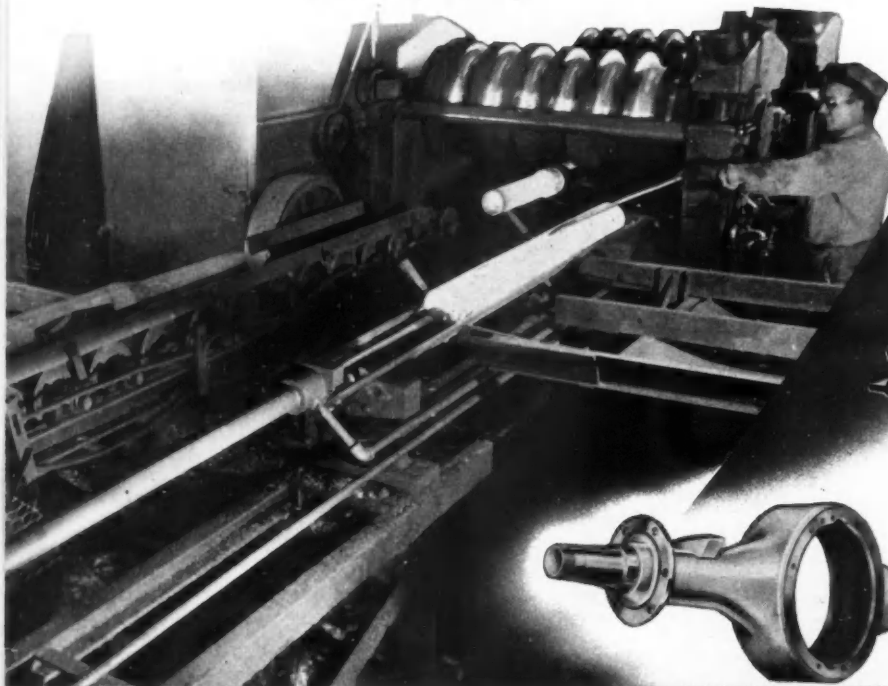


## IT'S A FACT... there's no other housing like it!

This is the most widely used commercial axle housing in the world. The reason is simple: it withstands far greater loads and shocks. It never takes a permanent set . . . always returns to alignment . . .

protects vital precision parts, keeps them in accurate alignment, prevents costly damage. Have you an immediate interest in lower ton-mile costs?

Get acquainted with this masterpiece of Clark Engineering.



Prices on CLARK products will not be advanced in excess of increased costs.

# CLARK EQUIPMENT COMPANY

BUCHANAN, MICHIGAN

OTHER PLANTS - BATTLE CREEK, JACKSON, BERRIEN SPRINGS, MICHIGAN

## Tire Economy

(CONTINUED FROM PAGE 58)

service; original tires going to recap; recap tire going out of service; recap going back to recap shop for second or third recap.

From these figures we can get a year-to-year comparison on four groups of tires. We can get the cost for any group for any period. We can then take any group and find out exactly what is happening and, if somebody or some condition is causing us to slip up, we can correct it.

This tells us many other things, too. For instance, we might be sending tires to the recap shop too soon. We had a tire manufacturer tell us, not long ago, that we could leave his originals on a little longer before they went to recap because they had a deeper undertread than formerly and, for that reason, we could wear them down more.

This same set of records gives us the information we need on the premature failure, whether our fault or the fault of the maker, and gives us a chance to make corrections or collect on the minimum mileage guarantee.

All our recapped tires are operated on trailers. We have records which show exactly how long each recap runs and just how the work of each recapper stands up.

Axles and alignment on trailers are constantly checked by the maintenance department, and we are constantly searching for causes of tire wear and striving to correct abnormal conditions.

### Detailed Cost Data

**BY LOOKING** at our records, we easily find that our highest cost was \$2.78 per one thousand miles and that it is now down to \$1.66, which represents the period of early synthetics and the critical war period. The present tire is doing a better job.

If we are blandly told that today's tire is exceeding or equalling prewar tires, we have only to look at our records, where we find that a prewar rayon cord tire ran us more than 60,000 miles at a cost of \$1.10 per thousand miles, and the surprising fact, too, that some of our cotton cord prewar tires ran for \$1.10 per thousand miles.

In 1940, our recapping cost per

thousand miles was 70c. It went much higher than our present cost which is 1.31 per thousand miles. And since skill of the workman and attention to detail is fully as important in recapping as materials used, we have already detected a trend for the better which we know is due to skilled workers coming back to their old jobs after work in war plants or service with the armed forces.

This record also gives us a graphic picture of the different classes of work done by different recapping shops

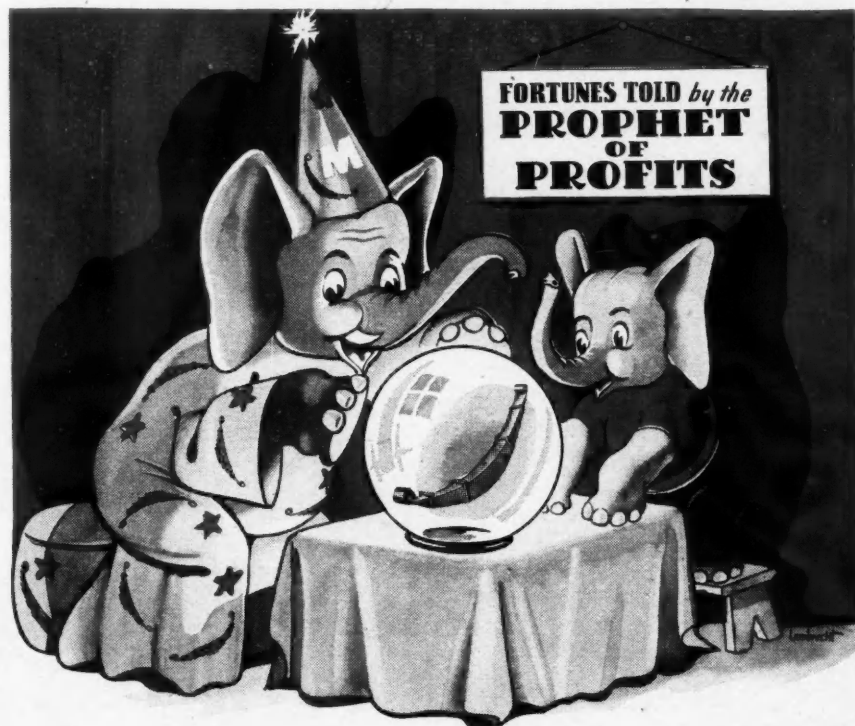
using the same materials. This is a revelation in itself.

You might think this would be a good place to stop recording and analyzing but we go another step.

### Performance Record

**FROM** all the records we collect data and set it up on what we call a Product Performance Sheet. This helps us locate our worst tire.

On this record we list each make, size and type of tire and divide them  
(TURN TO NEXT PAGE, PLEASE)



In the crystal ball . . . I SEE SPRINGS! You, too, can look into the future and be a real *prophet of profits*, by using **MAREMONT'S NEW SPRING INSPECTION PROGRAM.** You can detect and replace overworked springs long before they fail, reducing maintenance costs, increasing profits. When replacing, insist on genuine **MAREMONT SPRINGS**, made of alloy steel. They cost no more than ordinary springs. See your **MAREMONT Distributor** or Spring Service Station. Write for **MAREMONT'S** free inspection chart and latest catalog. Remember, **MAREMONT Springs** won't let you down.

*Also Manufacturers of Maremont Mufflers and Pipes*



**MAREMONT**  
**SPRINGS**

SINCE  
1877

MAREMONT AUTOMOTIVE PRODUCTS, Inc.  
1800 E. Ashland Ave., Chicago 5, Ill.  
Patents of Chicago, Grace and Harvey, Ill.

## Tire Economy

(CONTINUED FROM PAGE 121)

into four groups of failures under these classifications:

1. Diagonal star or shoulder break.
2. Tread cracking.
3. Separation, either ply or tread.
4. Miscellaneous, spotting, cutting, etc.

Total of all groups are broken down into a cost per mile. Two groups of failures are allotted to re-

capped tires and to analyze this data you have to know that each recapper had the same type of casing to work on.

With this information, we can take a quarter of a year and check recaps, compare costs per mile of each group, compare work of recap shops, detect improvement or the opposite, and from this determine where we need to get in our quickest and strongest licks.

In our posted schedule of air pressures, we require an extra 5 lb. pres-

sure in all outside tires. This is because the heat from the brake drum will raise the inside tire 5 lb. higher and when we use an extra 5 lb. in the outside tire we have equal pressure under operating conditions.

Here are the inflation pressures we use throughout the Silver Fleet system:

| Size     | Front | Rear Inside | Rear Outside |
|----------|-------|-------------|--------------|
| 6:00-20  | 50    | 50          | 55           |
| 6:50-20  | 50    | 50          | 55           |
| 7:00-20  | 55    | 55          | 60           |
| 7:50-20  | 55    | 55          | 60           |
| 34-7     | 75    | 75          | 80           |
| 8:25-20  | 60    | 60          | 65           |
| 9:00-20  | 65    | 70          | 75           |
| 10:00-20 | 70    | 75          | 80           |
| 11:00-20 | 70    | 75          | 80           |
| 11:00-22 | 70    | 75          | 80           |

END

(Please resume your reading on P. 43)

## Simple System Keeps Track of Trucks

(CONTINUED FROM PAGE 51)

to page 67, then to the first left-hand column, where we find number 21. We can then follow the details of the day-by-day operation of trailer 2167 which has been jotted down in code under the dates running across the top of the page. We find that under March, 15, trailer 2167 was hauled from Detroit to Syracuse by tractor 1702. This is entered in our book under March, 15, "D-SY 1702." As a double check, we can turn to page 02 and in column 17 under the same date, March 15, find the same information which has been entered "D-SY 2167."

This double page ledger is our permanent record of tractor and trailer movement, but it tells us a lot more, if there is more to tell. Opposite trailer numbers we designate with a capital "T" all trailers with tandem axles. If for one reason or another equipment is delayed enroute, this is designated by a square drawn around the code letter of the city or town where it is delayed.

### Data on Delays Wired

ALL drivers and operators in our service are instructed to telegraph the general transportation department when delayed more than two hours, reporting the reason for this delay. This information is immediately transmitted to the destination termi-

(TURN TO PAGE 124, PLEASE)

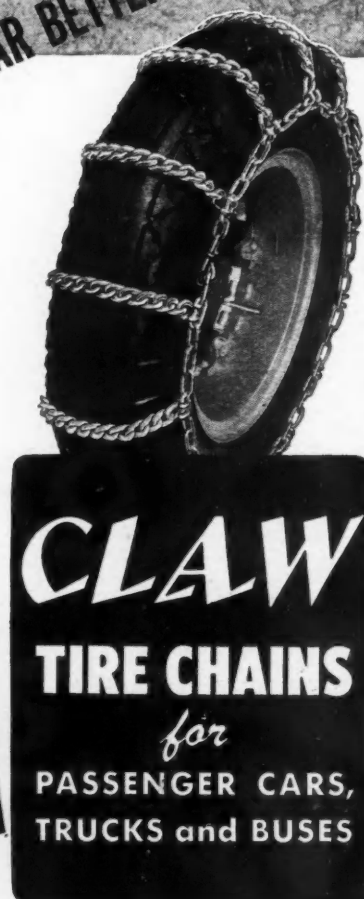
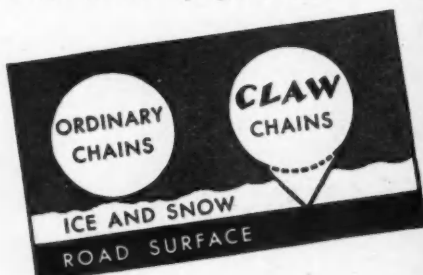


...THIS IS A FAR BETTER WAY

Use CLAW Tire Chains and stop worrying about winter driving. For CLAWS have a knife-sharp wedge of extra steel that bites in at the point of traction. You get a positive grip that minimizes the dangers of stalling and skidding on snow or ice covered highways. CLAW links are made of a special, hardened alloy steel...have 20% more steel in every link...give extra mileage...extra traction...greater safety.

CLAW Tire Chains should always be at hand. Avoid delays...danger...embarrassment. Drive with confidence...drive with CLAWS.

Columbus-McKinnon Chain Corporation, General Offices: Tonawanda, N. Y., Plants at St. Catharines, Ont., Can. and Vereeniging, So. Africa.





## How Dominic V. Kane saves 3¢ on every ton he trucks!

**B**ACK IN 1941, we made a survey of all our trucks," says Dominic V. Kane, president of the Brooklyn Union Coal Company.

"We found out that truck operation and maintenance cost us about 78¢ a day per ton for all factors, including driver's wages, repairs, lubrication, depreciation—the works.

"Like everyone else in the business, our equipment has had tough hauling since '41—two hundred thousand miles annually.

And yet, last year, in spite of high labor costs and old equipment, we've actually saved 3¢ per ton in unit cost of operation and maintenance."

"The fact that we've had no breakdowns due to oil since we started using Gulf Dieselube H.D. a year ago, has an awful lot to do with the lowering of our operating costs."

### Hires Fewer Trucks

"Sure, there are other reasons for the 3¢ cut besides the oil. For instance, once a week we check over every job completely.

"Still, since we put in Gulf Dieselube in '44, we haven't had to get nearly as many hired trucks to pitch in because of breakdowns. We've had more of our own units in operation. And that saves money!"

8-year winner of the safety fleet award, Dominic V. Kane's Brooklyn Union Coal Company, Brooklyn, New York, has 22 units operating in heavy Brooklyn traffic.



Affiliated Photo—Conway

*In '44 he tried a new oil!*

### Head Mechanic

### Praises Gulf Dieselube

"Our head mechanic tells me that Gulf Dieselube H.D. has more body.

"It stands up and protects your motor. And with our motors running all day long, starting and stopping at lights, an oil that can take it is mighty important!

"That detergent in Gulf Dieselube cleans out the inside of your motor, too—keeps it free from sludge. Oil lines and screens stay open.

"Believe me," smiles Kane, "I'd recommend Gulf Dieselube H.D. to any outfit that wants to save money on unit costs!"

*A Gulf Engineer will call on you free of charge anytime you wish.*

He'll inspect your fleet—then tell you, quite frankly, if Gulf Dieselube H.D. can improve your operation and lower your costs.

Just write the Gulf Oil Corporation, 3800 Gulf Building, Pittsburgh 30, Pa.—and we'll make arrangements.



## Change to GULF DIESELUBE H. D.

For Heavy-Duty Gasoline and Diesel Engines



# NEW LIFE *for* OLD CARS AND TRUCKS

MARVEL-SCHÉBLER CARBURETER DIV. • BORG-WARNER • FLINT 2 MICH.

## Simple System Keeps Track of Trucks

(CONTINUED FROM PAGE 122)

nal. If the operator is involved in an accident or is having serious motor trouble and needs assistance, he is instructed to telephone the general transportation department and we immediately dispatch aid. When the equipment is ready to roll again, the operator is instructed to wire us the exact departure time. All this information is immediately given to the destination terminal.

A "Transportation Department Service Call" slip, Fig. 2, is made out for every telegraphed or telephoned message we receive on equipment enroute, regardless of how serious or minor the message may be. This form gives a detailed description of the delay. The service calls are numbered; beginning with No. 1 on January 1 and continue on through December 31. A service call is also made out for loads delivered enroute. For example, a shipment is sent from Chicago to Monroe. When the driver is empty at Monroe, he calls the general transportation department for further instructions. This is all shown on the service call which is made out on receipt of the driver's telephone call. These service calls are all entered in the "00 to 99" book, as previously mentioned, by a square drawn around the code letter of the town from which the message was received.

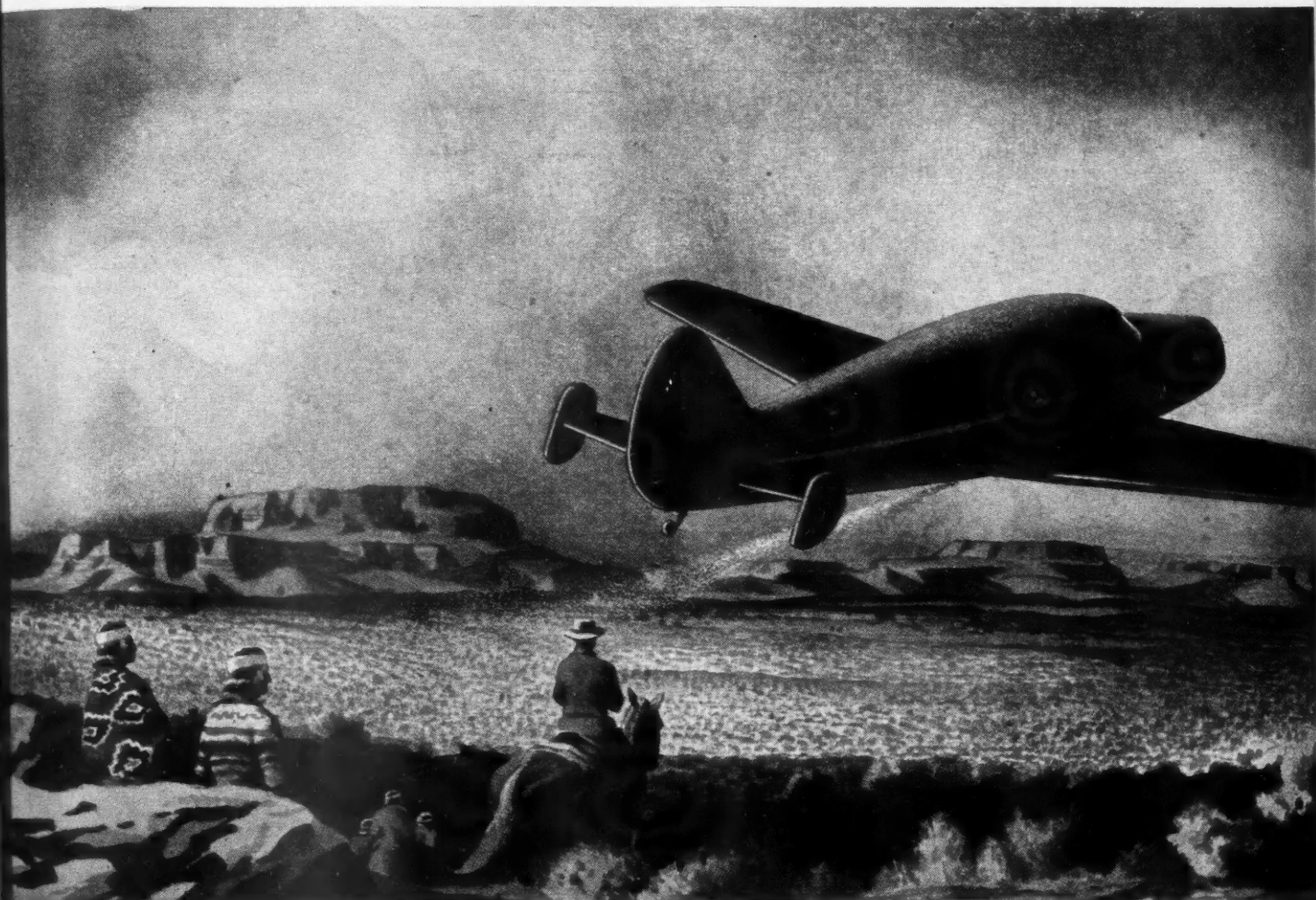
As another cross reference, all service calls are entered on a daily sheet known as "Daily Service Calls Follow-Up," Fig. 3. For example, the sheet for March 15 contains service calls numbering from 963 to and including 975. The first vertical column on the left contains the number of the service call, the second column contains the tractor and trailer numbers, the third column contains origin and destination of the load in code. The point the call was received from is noted under the origin and destination. As an example, on service call No. 965, tractor 1365 trailer 2307 enroute from Detroit to Syracuse was stopped at the Erie, Mich., scales due to overweight on the rear axle. This is shown on the follow-up

1365 D-SY

sheet as "965 2307 ER—Scales"  
(TURN TO PAGE 126, PLEASE)

# What's The Limit?

Denuded pasture lands in Arizona are being replanted with hardy, dry-weather Lovegrass by using a plane to sow seeds encased in clay, fertilizer, insect and rodent repellents. *A strip 1,000 feet wide, with one pellet per square foot, is planted as the plane flies along!*



## IS *Porous Chrome* THE ENGINE-LIFE PISTON RING?

We can't give you the final answer to that question yet. However, we can tell you that more than 7,000,000 miles of road tests in all types of service—from the stop-and-go of door-to-door delivery to the steady grind of cross-country hauling—have proved that Porous Chrome [VAN DER HORST PROCESS] multiplies piston ring life by four—even five! We can tell you that the fine honing action of these rings causes the entire set to seat within the first hour of operation,

thus eliminating the costly wear of the break-in period. We can tell you that American Hammered Porous Chrome Rings *cut cylinder wear in half!*

Cut maintenance costs and stretch the time between engine overhauls by installing these amazing rings in your truck or bus engines. Call your American Hammered piston ring jobber *today!* Koppers Company, Inc., Piston Ring Division, Box 626, Baltimore 3, Maryland.



## American Hammered Piston Rings





## Simple System

(CONTINUED FROM  
PAGE 124)

Fig. 4. Register sheet 8½ x 11 in., used at all company check stops at which drivers stop for truck service and eats

| BRIDGEWAYS, INC. REGISTER               |         |          |              |           |   |          |          |                    |  |
|---|---------|----------|--------------|-----------|---|----------|----------|--------------------|--|
| STATION NO. <i>Maple Auto Supply Co</i> |         |          |              |           | LOCATION <i>U.S. 25, Napakometa, Ohio</i> |          |          |                    |  |
| TRACTOR                                 | TRAILER | DRIVER   | FROM         | TO        | DATE                                      | TIME IN  | TIME OUT | REMARKS            |  |
| 1209                                    | 2187    | Larcham  | Cincinnati   | Detroit   | 6-11-46                                   | 2:30 PM  | 3:30 PM  | O.K.               |  |
| 1198                                    | 2503    | Snyder   | Toledo       | St. Louis | 6-11-46                                   | 4:30 PM  | 5:30 PM  | O.K.               |  |
| 1910                                    | 72158   | Wilton   | Buffalo      | St. Louis | 6-11-46                                   | 2:30 PM  | 3:30 PM  | Too much wind      |  |
| 1214                                    | 2474    | Jeffries | Elkhart      | St. Louis | 6-11-46                                   | 3:30 PM  | 4:30 PM  | Carburetor trouble |  |
| 1828                                    | 2501    | Knock    | Indianapolis | Detroit   | 6-12-46                                   | 11:30 AM | 12:00 PM | Running hard       |  |

All wires received regarding tractors or trailers are filed after all per-

inent information is taken off them under the equipment number, service

calls are filed numerically and the daily service calls follow sheets are filed by date.

We have set up a road system of inspection and have made certain provisions along our routes for drivers to get in touch with us periodically, which helps us to keep in almost constant touch with our equipment as it travels. Our system of control is designed, not only to expedite equipment movement, but is also designed to prevent accidents as far as possible; to see that all equipment leaving terminals is in first class condition from the safety point of view and that needed supplies, tires, oils, fuels are strategically located here and there for use of equipment on the road.

**Clearing Station Checks Trucks**  
TRACTORS and trailers are supposed to be in first class condition in every way when they leave our various terminals. They must be in good mechanical condition, properly fueled, oiled and equipped with safety equipment such as flares, fire extinguishers, flags, etc. At some of our terminals equipment gets a double check before hitting the highway. At Toledo, for instance, equipment after leaving the terminal goes through another and final inspection at a little station we call, for want of a better name, a "clearing station." Here the driver's log book is given  
(TURN TO PAGE 128, PLEASE)



... L. H. MOULTON (left) and D. T. BUIST newly named director and asst. director respectively, of national sales for Turco Products, Inc.

# GUNITE



## BRAKE DRUMS

### PROVED BY USE

Many of the present steady users of GUNITES were at first skeptical of the claims we made—that these drums would reduce costs, give better braking efficiency, eliminate drum breakage. We urged that they try a set on their toughest runs, and let the drums themselves prove in actual use that our claims were not exaggerated. Outstanding performance and economy earned increasingly wide acceptance, so that GUNITES now are favorably known throughout the transport industry. Buy GUNITES—for better braking!



    
GUNITE BRAKE DRUMS . . . FOR TRUCKS, TRACTORS, TRAILERS and BUSES

# **LOOK! OIL TODAY CAN AND SHOULD DO DOUBLE-DUTY!**



**HAVE YOU TRIED  
QUAKER STATE  
HD OIL?**

**IF** you haven't, you don't know what real double-duty oil can do. How much it can mean to bus, truck, and tractor operating profits. You'll get better, longer-lasting, lower-cost lubrication. *Plus* really *clean* engines—free from troublemaking dirt, sludge, gum, sticky “varnish” and all their costly consequences.

That's why Quaker State HD Oil can save you money and trou-

ble. Actual experience with this oil will prove it. Try it now.



Quaker State HD Oil for your trucks, buses, and tractors  
Quaker State Motor Oil for your passenger cars

**QUAKER STATE OIL REFINING CORPORATION • OIL CITY, PENNSYLVANIA**

JANUARY, 1947

Use postage-paid card inserted at page 57 for free information on advertised products

127

## Simple System Keeps Track of Trucks

(CONTINUED FROM PAGE 126)

another and final check. If he hasn't been off for eight hours, he does not drive; smell of liquor on his breath and the load is taken from him. If he hasn't proper safety equipment, it is furnished to him before he departs. He must carry it.

This double check pays off and saves us much potential trouble. We get messages from these points as

**Fig. 3. Daily Service Call Follow-up form, 8½ x 11 in., upon which all wires are posted**

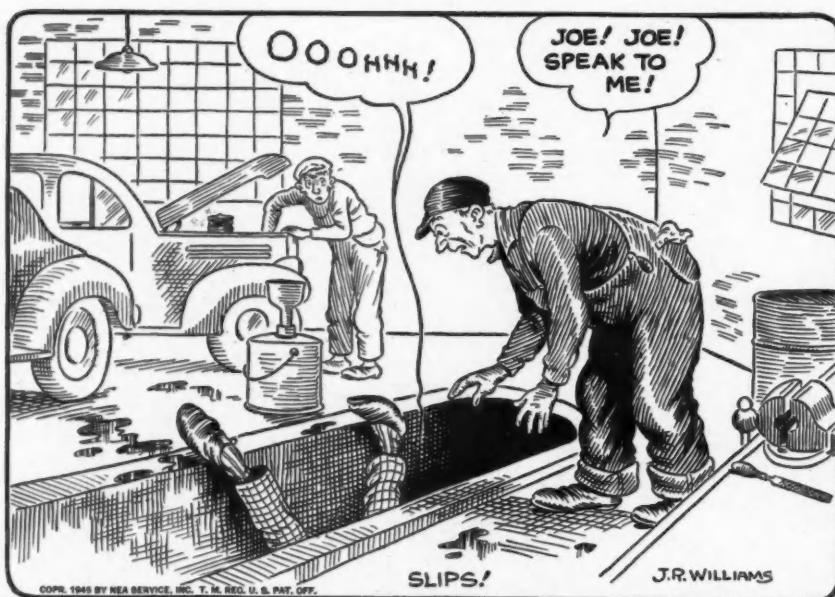
| BRIDGMAN'S, INC.<br>DAILY FOLLOW-UP SHEET |                       |
|---|-----------------------|
| 1202                                      | C-CI                  |
| 2298                                      | C                     |
| 1444                                      | C-CL next             |
| 2299                                      | C                     |
| 1378                                      | D-PH my CL            |
| 2300                                      | DA & SA               |
| 1721                                      | D-EV                  |
| 2301                                      | Moonville, Ind.       |
| 1283                                      | CO                    |
| 2342                                      | 1 chimney 36" midland |

July 5, 1946

well as from terminals, advising departure of equipment, exact time of

leaving and destination. If anything is found wrong, we learn about it.

## OUT OUR WAY



Above is a portrait of a mechanic, deciding to take up some other business, when, as, and if he gets out of the hospital.

With SOL-SPEEDI-DRI, you can end the dirty, dangerous accumulations of oil and grease on the floors around your shop, garage, gas station, truck or bus terminals.

SOL-SPEEDI-DRI is easy to use and inexpensive. It cuts down accidents, falls, and the dangers of fast-spreading fire . . . it works while you work safely.

SOL-SPEEDI-DRI, white, dry and granular, is oil-thirsty, absorbs oil just as a blotter does ink. Spread a carpet of it, wherever oil and grease accumulate and you immediately have a white, non-skid surface. Sweep it up, and the floor will be clean, dry, and safe. No more mess, no more slipping, no more back-breaking floor-cleaning jobs.

Write your name and address on the margin of this page for a Free Sample and complete details.

SUPPLIERS: East—Safety & Maintenance Co., Inc., No. 1 Wall St., New York 5, N. Y.  
South, Midwest & West Coast—Waverly Petroleum Products Co.,  
Drexel Bldg., Philadelphia 6. Pa.

**SOL-SPEEDI-DRI**  
OIL AND GREASE ABSORBENT



## Three Road Inspectors

WE EMPLOY three full-time road inspectors. At any time, they check for lights, flats, loose wheels, for equipment running late, drivers sleeping along the highways. Faulty equipment is ordered into the nearest garage for repairs. Our road inspectors notify us of all these things, even if the check discloses everything in order. Units not properly equipped with safety devices are taken care of by the road inspectors who carry a supply with them at all times. The inspector is also equipped to effect emergency roadside repairs.

Here and there throughout the system we have located tire depots with service facilities covering perhaps a 50-mile radius. Very important to us are the check stations we have provided throughout our routes, which are located about 100 miles apart or less. These stations are selected by our company as check stops for their convenient location and service station and restaurant facilities.

Each check stop is equipped with a company time clock and registering sheet. The driver punches the time clock in and out on his trip record and the register sheet, writing in his name, tractor and trailer number, origin and destination on the register sheet. When the sheet is full, it is mailed to Detroit so we have a running account of the driver's trip.

If a man is "lost" between stations, (TURN TO PAGE 130, PLEASE)

. . . Edw. G. BUDD, Jr. recently elected to succeed his father as president of The Budd Co.





### TESTING A BELL

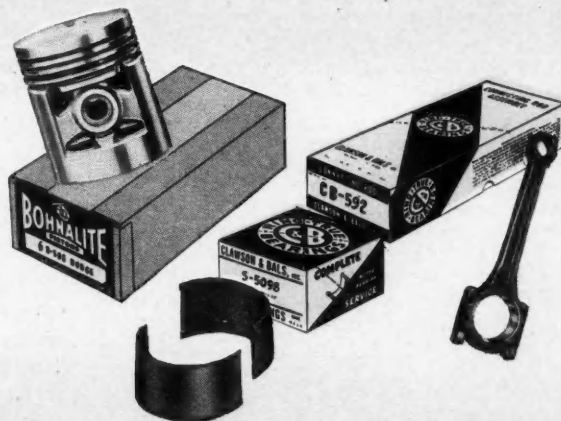
A bell of finest quality must be cast and finished with extreme care to give it exactly the right tone . . . to make it "ring-true."



## "RING-TRUE"

### IN AUTOMOTIVE PRODUCTS, TOO, "RING-TRUE" MEANS THE FINEST

Get to know *all* these automotive products bearing the "Ring-True" emblem of Clawson & Bals:  
Engine Bearings... Reconditioned and Rebabbed Connecting Rods... *Bohnalite* Pistons and Pins... Hydraulic Brake Parts... Hydraulic Brake Hose... Whip Ends... Water Pumps... Water Pump Repair Kits... Spring Shackles... and Flexible Hose Assemblies for gas, oil, grease and vacuum lines. If it's "Ring-True," it's the *finest*! Clawson & Bals, Inc., 2508 S. Michigan Ave., Chicago 16.



## CLAWSON & BALS, INC.

Really Complete Engine Bearing and Connecting Rod Service... Branches in Principal Cities

## Simple System Keeps Track of Trucks

(CONTINUED FROM PAGE 128)

and we do not hear from him for a longer time than is normal, we check back to the last wayside station from which he sent us information and from that point see that a road inspector follows his trail.

For some reason or another, breakdowns in rural areas may remain unreported within the specified two

hours. Perhaps there are no communication facilities or perhaps the driver dare not leave equipment sitting along the roadside alone. In such cases, our checking system proves invaluable and helps us keep equipment rolling with a minimum of lost time. Where drivers do make such reports, a road inspector is immediately dispatched to him.

We lease most of our power on a trip lease or on a running lease, and pay so much per ton-mile for usage of power.

## Teletypewriter Service

OUR system permits very little to get by us, but we are now in the process of improving it further. We have recently leased teletypewriter service between all of our terminals with central control at Detroit. These teletype machines will be hooked up on three separate circuits, as far as the system terminals are concerned, but if a terminal on No. 1 hookup wants to exchange messages with a terminal on No. 2 or 3, he will notify us here, in Detroit, at the focal point of the system. Merely by setting a dial, we in Detroit will give these terminals their connections. However, since we are the focal point for the whole teletype system, every message exchanged between any terminals or terminals and roadside stations will automatically be taken down in our Detroit headquarters. This simply means that we will tighten up our already rigid control system.

In addition to giving us a complete 24-hour picture of fleet movement, this new system will eliminate much present repeating of messages, will prove much faster than phoning and will lead to greater communication economy. All messages over this system will come to the Detroit office in duplicate and we will keep one copy for a Master copy.

These are the methods by which we control our large fleet. It is not an involved system but is, indeed, rather simple; consequently, not only easy to understand but easy to administer. However, the chief point is that, even if we are a thousand miles away from a certain piece of equipment, we still know how this equipment is getting on, and we know it almost at once.

END

(Please resume your reading on P. 52)

## SLUDGE and DRUDGE Knocked Out!

... by the most complete line of Parts Cleaning Equipment in the Automotive Service Industries.

All who attended the recent A.S.I. show in Atlantic City were enthusiastic in their reception of the 1947 Klee-Flo Line. ... From the Klee-Flo Parts Cleaning Brush to the automatic Klee-Flo POWERMASTER Block Washer.

## Klee-Flo PRODUCTS



PRACTICAL DAN,  
THE *Klee-Flo* MAN SAYS:

"Ask Your Jobber Salesman for Details About the Klee-Flo Profit Making Products You Need or Write Direct for More Information!"

RECOMMENDED BY AMERICA'S  
LEADING CAR MANUFACTURERS!



*Practical Products  
Company*

Manufacturers of Automotive Parts Cleaning  
Equipment  
Minneapolis 8, Minnesota



The 1947 streamlined Klee-Flo CLEAN-MASTER Parts Cleaner  
Cleaning Compound: Klee-Flo HI-T DEGREASOL



The new and different Klee-Flo POWERMASTER Block Washer ... gets fired, mechanically actuated.  
Cleaning Compound: Klee-Flo HI-T GREASOFF



The Klee-Flo CARB-U-TATOR for efficient cleaning of carburetors, pistons, etc.  
Cleaning Compound: Klee-Flo HI-T CARBOSOL



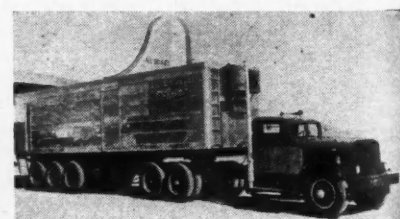
The Klee-Flo CLEANING BRUSH, heavy duty ... will not soften or flare out.  
The Klee-Flo FILTER ELEMENT for use in the Klee-Flo Patented PUMP.



The Klee-Flo ROTO-PUMP for safe removal of liquids from containers ... reversible action.



The Klee-Flo HYDROMASTER External Engine and Chain Cleaner, Air operated with Automatically Controlled Spray Gun.  
Cleaning Compound: Klee-Flo HI-T MASTERSOL



Crabmeat, flown in from Alaska is being transferred to Moseley Transport equipment at San Francisco Airport. Vital statistics: Autocar diesel, model DC-100, tractor; Trailmobile three-axle all-aluminum trailer with 37,000 lb. capacity; Thermo King refrigeration unit, said to hold zero deg. F.



# Economical!



For free-wheeling economy of operation, it was hard to beat the mill wheel in the early days of American industry.

H-W Hydraulic Jacks offer modern economy through a combination of easy, fast operation, dependable performance, and lasting durability. Hein-Werner qualifies in all these respects, and is "priced right," too, for dollar-wise economy.

Hein-Werner manufactures high quality hydraulic jacks *exclusively*. Complete line includes models of 3, 5, 8, 12, 20, 30 and 50 tons capacity, as well as service jacks for shop use. See your H-W Jobber, or write us for details.

**Hein-Werner**  
HYDRAULIC JACKS

• BUILT RIGHT  
• PRICED RIGHT

**HEIN-WERNER MOTOR PARTS CORP., WAUKESHA • WIS.**



## IHC Service School

(CONTINUED FROM PAGE 63)

and had been coached for the previous week by the district service manager in methods of conducting instruction.

The 83 students were divided into six groups, with each group attending each of the six sections of the school at designated periods. The plan arranged for two-hour sessions at each station or section. The sec-

tions consisted of: engine rebuilding; fuel and cooling systems; steering geometry, wheel balancing and brakes; rear axles and propeller shafts; tuning and electrical equipment, and parts requisitioning.

As each group reached its proper station, it found the instructor ready, with his equipment, charts and material in order. Instruction began immediately, according to a set procedure developed over the last two years. The procedure, however, was sufficiently flexible to permit any stu-

dent to obtain precise instruction covering any point on which he was weak.

As the instruction proceeded, the students took over the demonstrations to learn by doing, as well as by demonstration and lecture. Instruction covered not only current models of units, but such old models as the men would likely to be called on to service and repair.

### Engine Rebuilding Section

**1** THE engine rebuilding section included such instruction as how to grind valves, how to bore cylinders, how to install sleeves, how to fit bearings, align clutches and check wear in corresponding parts. Complete tools and equipment for this and related procedures were installed in the classroom so that the men watched an instructor demonstration and then actually went through the operations themselves.

Throughout the lecture the importance of precision fitting and adjustments was stressed. It was emphasized that a mechanic is only as good as the care he takes in completing a job. The instructor criticized harshly the hit-or-miss method of installing and adjusting units and showed why more accuracy is necessary in today's engines for best operating efficiency.

These men had had years of experience on engine work. They were good mechanics, yet they realized that they did not have all the answers. Each man seemingly gained a better understanding of precision engine rebuilding from this session and will no doubt apply improved techniques to his maintenance procedures with his fleet.

**2** ONE of the most interesting lectures from the standpoint of preventive maintenance was the one on engine tune-up. This section was comprised of a careful selection of precision electrical testing instruments for complete tune-up.

The introduction consisted of explaining the use and importance of the instruments, with the students then using each instrument for tuning an engine. For instance, each man in the class actually tested and adjusted a distributor on a synchroscope. He made a test of the engine with an exhaust gas analyzer, set the carbure-

(TURN TO PAGE 134, PLEASE)

## FOR QUICK, EASY MUFFLER REMOVAL

**The HALL**

**MUFFLER REMOVAL KIT**

● Here, in one complete, convenient, low-priced kit, is every tool needed for quick, easy muffler and tail pipe removal . . . Saves time and tempers . . . Permits muffler removal without damage to tail pipe . . . No service shop can afford to do without this Muffler Removal Kit . . . Immediate delivery . . . If your Jobber can't serve you, Kit will be sent prepaid direct from the factory on receipt of price.

● Kit includes Power Saw, Tube Cutter and Snow Plow Chisel shaped to fit the contour of the pipe, — complete in metal box with extra Saws and Cutter Blades, Wrench and Pins for easy operation of Tube Cutter.

**\$15.00**

**The HALL Mfg. Company TOLEDO 7, OHIO**

WE STOPPED TAKING  
ORDERS MONTHS AGO!



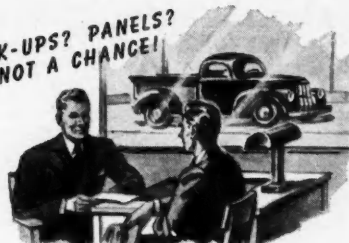
New car production can't meet the demand. A Full Power Motor Reconditioning job on your present car is the answer to more carefree driving.

DELIVERY? WE CAN'T  
PROMISE ANYTHING!



So don't neglect your present car. There are many miles left in it. Your dealer can give you a Moog Full Power overhaul for another year's driving.

PICK-UPS? PANELS?  
NOT A CHANCE!



But deliveries must be made, and wise business men can keep their present trucks rolling with a Moog Full Power Motor Reconditioning job.

**NEW CAR?**  
**LONG TIME NO SEE!**

Many car owners will have to make their present cars do another year. To add thousands of miles to the family or business car, have your repairman give your worn motor a Moog Full Power Reconditioning.

Moog X-Plus Full Power Piston Rings restore motor performance, with gasoline and oil economy... the answer to today's motoring needs.

Write us for name of your nearest Moog Full Power distributor and learn how you can enjoy better motoring until more new cars are available.

### MOOG PISTON RING COMPANY

Division: MOOG INDUSTRIES, INC., ST. LOUIS, MO.

Moog X-Plus Full Power Piston Rings  
Moog Coil Action Front End Parts  
Moog Electrically Heat Treated Springs



(U. S. PAT. NO. 1,771,198)



COPYRIGHT 1947  
MOOG INDUSTRIES, INC.

As Advertised in the **THE SATURDAY EVENING POST**

JANUARY, 1947

Use postage-paid card inserted at page 57 for free information on advertised products

133

## IHC Service School

(CONTINUED FROM PAGE 132)

tor, adjusted timing and made individual unit checks with proper instruments assembled for him.

It is safe to say that every man in the class, seasoned mechanic or apprentice driver, learned many points about the scientific approach to engine tune-up and gained a better appreciation for instrumentation from this session.

**3** A GREAT deal of practical information was passed out during the wheel and axle alignment session. The lecture moved fast, and each man presented individual problems during the discussion which followed. These men, no doubt experienced in wheel alignment procedures, learned a great deal about tire wear, steering troubles and their relation to wheel alignment. The primary aim of the instruction was to show how the steps in wheel alignment can be simplified and carried out accurately by the

trained mechanic. The need for precision as well as periodic checks was stressed as a dominant factor in securing the best operating efficiency at the lowest cost per mile.

Included in this three-hour period was a discussion of brake relining procedures, brake drum grinding, shoe riveting, sanding and burnishing. The men worked at the machines provided and each actually carried out an assignment.

**4** ANOTHER section of considerable interest to most of the fleetmen was the one on rear axle and propeller shaft maintenance. During this period a differential was torn down and checked for wear. The men made adjustments under supervision of the instructor and assembled the unit.

The instruction emphasized the need for accurate checking and adjustments of this unit. The instruction proved how poor measurements of clearances is responsible for more failures than any other factor.

During this period the men actually riveted a ring gear to a differential unit on a hydraulic press. They learned a great deal about precision measurements with the micrometer and dial indicator and will no doubt make good use of it.

**5** A LECTURE of great interest to most of the group was the one on carburetor and fuel pump repair. The theme of the session emphasized the fact that precision adjustments and not guesswork will save breakdowns and improve operating economy.

The instruction stressed the importance of periodic checks and proper adjustments. Tips on troubleshooting fuel and carburetion bugs were presented. Here, too, the problem of cooling system maintenance was discussed, and men actually handled flushing guns and radiator flushers in carrying out practical assignments. Water pumps in various stages of deterioration were used to show the effects of improper maintenance while particular cooling system problems were discussed.

An outstanding feature of this session was the time spent in ironing out individual problems of fleetmen. The questions fired at the instructor showed that this information was well accepted and well worth the time consumed.

(TURN TO PAGE 136, PLEASE)

# OTC

## PULLING SYSTEM

### MAKES IT EASY

#### To PULL and REPLACE CLOSE FITTING PARTS



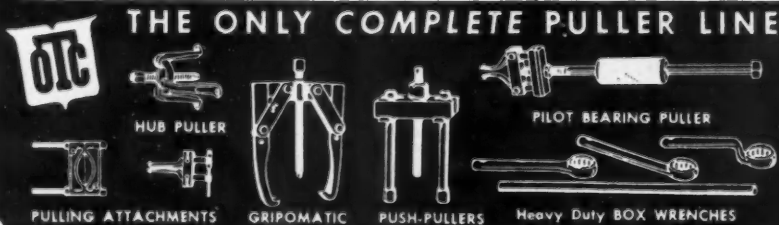
Bearings, pinions, collars, sprockets, gears, snap rings, shafts, sleeves, wheels and other "tuffies" are quickly and safely removed and installed with OTC PULLERS, attachments and Special Tools. They speed up overhauling jobs, stop parts damage, conserve energy, avoid skinned knuckles, shorten "down time" on trucks.

*Approved by all Leading Bearing Manufacturers.*

OTC No. PE-12 SET handles the widest possible range of work on trucks, busses and tractors—with minimum number of OTC TOOLS.

ASK YOUR JOBBER or write for OTC Catalog. It's a helpful manual on pulling operations.

**OWATONNA TOOL CO.**  
335 CEDAR STREET, OWATONNA, MINN.





NOT AFFECTED  
BY EXTREME  
TEMPERATURES

SMOOTHER,  
SURER  
STOPS

INSTANT,  
POSITIVE  
MANUAL  
PEDAL  
CONTROL

MORE THAN  
DOUBLES  
YOUR BREAKING  
POWER

EXCLUSIVE! This relief valve, exclusive with MICO, allows excess brake fluid to flow freely into reservoir at any desired pressure point, and then to return to the brake cylinder when pedal pressure is released.

**STOP**

INSTALLED  
WITHIN  
ONE HOUR'S  
TIME

No Boosters  
No Vacuum

## **Mico** **HY-PAR** **POWER BRAKE** **CYLINDER**

replaces the original master cylinder for greater safety.

Here is a truly compound hydraulic brake cylinder. Its braking power progresses while in mid-action from that of a conventional or low pressure cylinder to that of a high pressure unit, thereby more than doubling the braking power of the truck.

**HE'LL STOP  
NO MATTER  
HOW BIG  
THE LOAD!**

See your nearest MICO dealer  
or write for our new  
four-color catalog NOW!

**MINNESOTA AUTOMOTIVE, INC.**  
1332 Hennepin Avenue  
Minneapolis 3, Minn.

Smooth, instant braking with line pressure up to 2000 lbs. This tremendous pressure is produced with pedal control, absolutely independent of any power from the motor.

Installation and service are no problem as this unit requires no skilled workman, no special tools, or complicated adjustments of any kind. The simple design of the Mico Hy-Par cylinder means minimum maintenance too. There are only three cups ever to be replaced. These are all standard and can be purchased from most any jobber.

## IHC Service School

(CONTINUED FROM PAGE 134)

**6** ANOTHER two-hour period covered parts requisitioning, control and storage. This section had been modified to fit the needs of the fleetmen represented. Instruction covered such phases of parts ordering which would speed the job and improve accuracy in orders. Parts books were passed around and the class went through the various phases

of requisitioning. Parts identification received special attention as many errors are reportedly made through failure of the mechanic to recognize difference in parts with similar characteristics. It is oftentimes the case that the mechanic will install a certain part because it looks like the real thing—and fail to check parts numbers. It was the purpose of this conference to stress the importance of accuracy in selecting parts as well as in their requisitioning, and there is no doubt that the warnings will save

valuable man-hours and overhaul delays when these men recall this instruction at their own fleets.

While the instruction has been going on for the past two years, the program at this point has been developed quite thoroughly, the procedures effectively organized, and the training program itself brought to a high level of efficiency. Each month a school of this type is conducted at one of the branches of each district. The equipment and tools, which include as complete a set as a shop would normally have, are transported to each district by truck, while the faculty are selected by the district service manager from the International specialists and from among the service managers in that division.

The success of these Triple Diamond Service Schools is evidenced by the fact that already schools have been conducted at 45 IHC branches throughout the United States, with more than 3000 students attending.

END

(Please resume your reading on P. 64)

### A Trucking Primer

Recently published by the Department of Commerce is a booklet entitled, "Establishing and Operating a Trucking Business," designed to aid the prospective trucker in arriving at an intelligent decision as to the prospects for success in this field. The publication is one of a series designed to guide the veteran or other citizen desiring to establish a business.

It was prepared by James C. Nelson and Knute E. Carlson of the Transportation Division, Department of Commerce, and discusses all phases of the trucking business, including capital requirements, rates, costs, records, and selection and training of drivers.



BEFORE SHE BECAME QUEEN OF BROADWAY, THIS STAR OF "ANNIE GET YOUR GUN" WAS SECRETARY TO CALED S. BRAGG OF B-K VACUUM BOOSTER BRAKE CO.

- ☐ HELEN TWELVETREES
- ☐ ETHEL MERNAN
- ☐ KATHERINE CORNELL
- ☐ ETHEL WATERS

Answer on P. 142

1912 1947

# Keeping Trucks Busy for 35 years!

—that's the record  
of the Servis Recorder





★ Thirty-five "milestones" along the road of **BETTER TRUCK MANAGEMENT**—that's the life span of the Servis Recorder. During these years, this little device on trucks has been helping busy truck managers—

- record all idle time
- provide better routing
- avoid unnecessary overtime
- prevent speeding and accidents
- save gasoline and tires
- reduce insurance premiums

That's the 6-point story, in brief, of why the Servis Recorder is regarded as "first aid" by efficient truck operators everywhere. Moreover, the Servis Recorder helps the *drivers*, too, because it is fair to all—it evens up the work among them. "The good drivers like it and the other kind become better drivers," reports a truck manager. *Write for our booklet.*

**THE SERVICE RECORDER COMPANY**  
1375 Euclid Avenue, Cleveland 15, Ohio




## The Servis Recorder

Tells Every Move Your Truck Makes

• IN SERVICE AROUND THE WORLD.

A COMPLETE  
*New*  
LINE OF TRUCK  
WINCHES FOR  
INDUSTRY....

**BRADEN**  
*Winches*

• WRITE FOR CATALOG *Today!*





















**BUY BRADEN - They are Safer**

**BRADEN WINCH COMPANY**  
1001 East Admiral Boulevard



**TULSA 3,**  
Oklahoma





*Your NAPA Jobber  
is a Good Man to Know!*

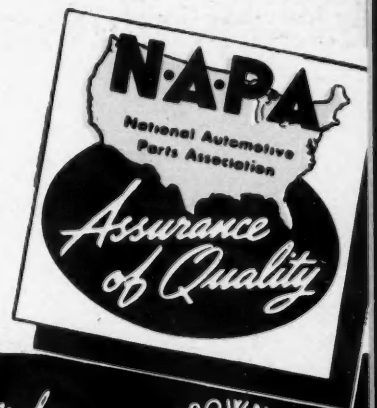
NATIONAL AUTOMOTIVE PARTS ASSOCIATION • DETROIT 1, MICHIGAN



- You can be sure, wherever you see the NAPA Seal . . . sure of genuine quality in the nationally known lines that carry it . . . sure of prompt, complete and cooperative service from the jobber who displays it . . . He's in business for the one purpose of giving you the kind of parts service you want on cars, trucks and tractors of all makes. And to better serve you, he has availed himself of all of the facilities, and all of the experience of the largest independent organization in the parts industry. Surely, your NAPA Jobber is a good man to know.

# NAPA

*is the largest Independent Parts Organization in the Industry!*



**American Brakeblok**  
BRAKE LINING • CLUTCH FACINGS  
TAN BELTS • RADIATOR HOSE

**Allied WISCONSIN**  
PISTONS • SLEEVES

**Spicer**  
UNIVERSAL JOINTS

**MONMOUTH PRODUCTS**  
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**TRICO**  
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**BROWN LIFE**  
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**STANDARD**  
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**BALKAMP**  
PARTS FOR FORD  
CHEVROLET • PLYMOUTH  
AND ALL POPULAR CARS

**CELORON**  
TIMING GEARS

**Allied PRECISION**  
PISTON PINS

**DUCKWORTH**  
TIMING CHAINS

**MARTIN-SENOUR**  
VALVE FINISHES

**Belden**  
HAND TOOLS

**DOUBLE DIAMOND**

**UNITED**  
PARTS FOR  
HYDRAULIC BRAKES  
PUMPS

## Maintenance Control

(CONTINUED FROM PAGE 75)

of specialized shops—is best illustrated by Table A. It will be noted that each division has a major overhaul base. These are really complete outfits handling the rebuilding of major assemblies on a production line basis. In addition each division has certain key shops designated for minor unit overhauls such as carburetors, compressors, fuel pumps,

and all electrical components; other shops set up for major trailer repairs, painting, battery rebuilding, and tire recapping; and still other shops organized as major supply depots. Discussion of these activities will also be the subject of forthcoming articles.

### Vehicle Standardization

STANDARDIZATION of units, our third objective, is something that takes a lot of time, particularly when

our maintenance system is so complete that the life of a vehicle becomes a factor bordering on the infinite. Nonetheless each of the two divisions now has an overwhelming preponderance of only two makes of powered equipment (in the long-haul class) and in both instances many of the major component units are interchangeable. As new equipment is added rigid specifications are stipulated to bring the vehicles in line.

### Centralized Control

OUR final objective, centralized control, is highlighted by a simple but detailed record system plus careful selection of key personnel whose duties and responsibilities are shown in Table B. Inasmuch as the major overhaul depots operate under an independent management, their personnel is shown outside the normal channels of responsibility. Our tire experts, at least one of whom is stationed at every shop, are responsible to the local shop foreman but are trained by and operate under the control of the two tire engineers; hence the dotted lines on the chart.

The central record system is key-noted by the 11 x 6½ in. control card, shown in part in the accompanying illustration. One of these for each powered vehicle is kept in permanent file at one of the two divisional offices. On it is recorded in brief the "case history" of each vehicle including all repairs and from it are calculated the due dates for each of the major inspections.

The two principal sources from which this information is gathered are: (1) the driver's daily trip ticket which indicates mileage and (2) the mechanic's daily time card which shows in detail the work accomplished on each vehicle. Both the driver's trip ticket and the mechanic's daily time card are forwarded weekly to the central accounting departments where they are punched and coded on International Business Machine records. Copies of the two "tapes" plus the original mechanic's report are then forwarded to the office of the division superintendent of maintenance. Here all data pertaining to individual trucks, including all inspection completed and main parts installed, is entered on the master control card.

Later, the "due date" of the next inspection is calculated on the basis (TURN TO PAGE 142, PLEASE)



**A "PEEK"**  
*at a*  
**PAGE..**

**BUT YOU'LL  
PROFIT BY A  
GOOD LOOK**

**AT THE  
ENTIRE 13-A  
EBERHARD CATALOG**

New trends in body designs require new improved automotive hardware.

Leaf through the pages of the 13-A Catalog until you "hit on" just the new item you've been looking for along with others you'll have specific use for.

On repair jobs requiring replacement hardware, it's a sure bet Eberhard "Long Run" fittings will improve appearance and afford increased life and practicability.

Fill out and mail the attached coupon now for your 13-A Eberhard Catalog.

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Please register my name to receive copy of 13-A Catalog.

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**EBERHARD** *Long Run*  
**TRUCK BODY FITTINGS**

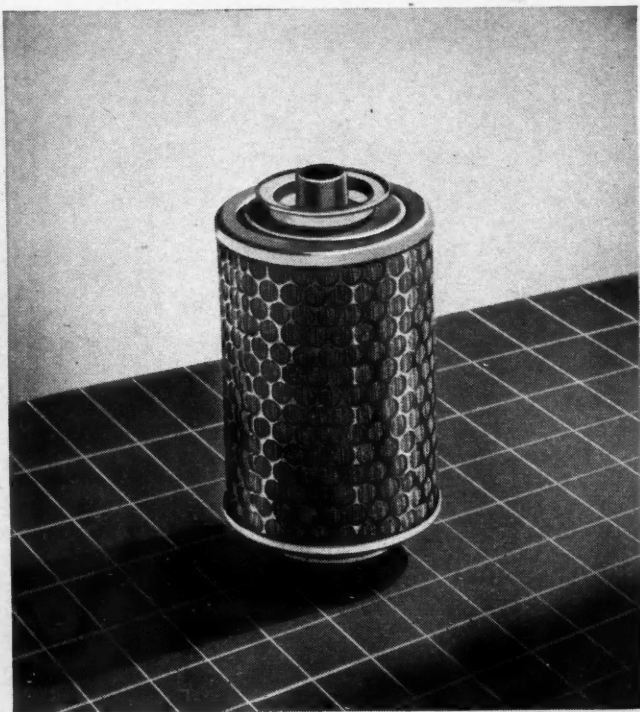
**EBERHARD MANUFACTURING CO.**

Division of the Eastern Malleable Iron Co.

2734 TENNYSON ROAD

CLEVELAND, OHIO





Solve your filtration problems by changing to AC's specially processed, long fibre cotton Replacement Elements. Fit all popular makes of oil filters. If you have no oil filters, equip with AC's for maximum protection against fuel waste, power loss, and engine wear.

AC SPARK PLUG DIVISION • GENERAL MOTORS CORPORATION

JANUARY, 1947

Use postage-paid card inserted at page 57 for free information on advertised products

**AC**  
**OIL FILTERS**

## Maintenance Control

(CONTINUED FROM PAGE 140)

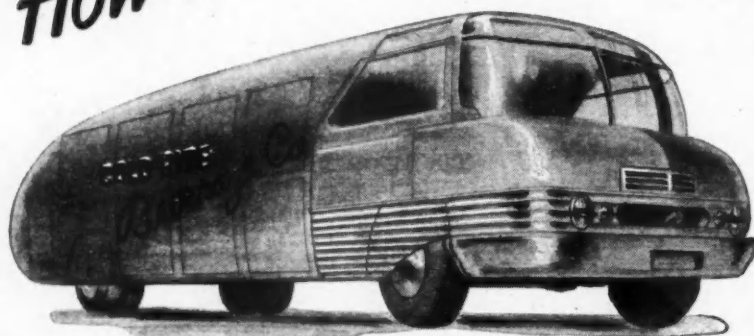
of mileage frequency. A form letter is then forwarded weekly to each of the terminal shops indicating the "due dates" of all vehicles concerned. If, for instance, a fuel pump or a rear end or any other item has been installed recently this is specifically exempted on the inspection notice. A similar letter is returned to the division office weekly by each shop.

GENERAL SERVICE

|          | OIL<br>CHANGE | A<br>INSP | B<br>INSP |
|----------|---------------|-----------|-----------|
| UNIT NO. |               |           |           |

**Control boards like this one, set up at each terminal shop, greatly simplify Associated's paper work. Lubrication is posted locally, all other due dates are set up by division control**

## HOW TO GIVE YOUR FLEET...



# Better Styling

**...AT LESS COST!**

**Body Posts • Roof Rails**  
**Rub Rails • Cross Sills**  
**Fenders • Roof Panels**  
**Cab Roofs • Ball Corners**  
**Lintels • Wheel Housings**  
**Roof Reinforcements**

Have your body builder supply us with your specifications and requirements. We develop a pilot model; engineer and produce the parts, sections, panels and supply these to your body builder who constructs your job. Hart extensive facilities permit advanced and individual styling; parts and time costs are less; and you can always obtain replacement parts for any number of fleet units regardless of where the body builder repairing the job is located.

WRITE FOR FULL INFORMATION TO DEPT. "C"

**WEST COAST DISTRIBUTOR**  
**Ideal Hardware and Supply Company**  
**3050 Leonis Blvd., Los Angeles, Calif.**

# HART PRESSED STEEL CORPORATION

ELKHART, INDIANA

SERVING FLEET OWNERS AND THEIR BODY BUILDERS WITH NEW DESIGNS

### Three Advantages

**WE HAVE** followed this procedure for three reasons. First, it greatly reduces both paper work and responsibility for control at the terminal shop level. Secondly, it eliminates need for forwarding records from one terminal or division to another when a vehicle is transferred, which occurs quite frequently. Thirdly, it eliminates the need of accurate odometers on the vehicles. Because we get a first-hand mileage record of every trip from the driver's ticket we have found that we do not need to rely at all on odometer readings. Due inspections are calculated by date based on mileage and we always have a positive record of all completions.

The system is aided by the fact that nearly all of our vehicles are assigned to regular routes and inspection frequencies by date can be calculated with amazing accuracy. An interesting side-light, incidentally, is the fact that nearly all our vehicles are assigned to but a single driver, or on very long runs to a single pair of drivers. Our experience on this point strongly supports the general belief that a vehicle assigned to one, or at the most two, drivers is much easier to maintain than a vehicle indiscriminately assigned.

### Control Board

**EACH** terminal shop maintains a control board (illustrated) on which inspection due dates are posted  
(TURN TO PAGE 144, PLEASE)

## • WHO IS IT?

**ANSWER...** (To Question on P. 136)

**Ethel Merman** was working for the late Caleb Bragg before starting her singing career.

**(Another Cartoon Quiz is on P. 144)**



REGISTRATIONS SHOW IT—OPERATORS KNOW IT!

# "FORD TRUCKS LAST LONGER!"

90 <sup>6</sup> H.P.  
YOUR PICK OF POWER  
100 <sup>8</sup> H.P.



Low-floor, multi-stop delivery bodies of varied types are available through Ford Dealers. Here is a fleet with bodies by Vanette, Inc., Detroit, Michigan.

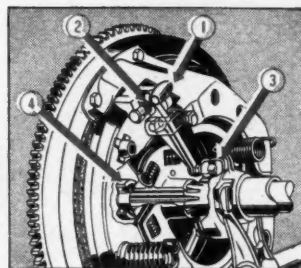
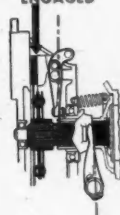


**ONE big reason:**

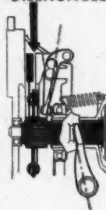
## FORD CLUTCHES STAND UP!

Torque-transmitting capacity of Ford clutches increases with engine speed, because centrifugal force is harnessed to add *extra* pressure to that exerted by the clutch springs. Thus, slippage and wear are minimized. Three weighted, cam-action levers (1), due to centrifugal force, act upon the back of the clutch plate, forcing it ever more firmly into contact with the clutch disc. Needle roller bearings (2) on these pivoted levers, and pre-lubricated ball pilot and throwout bearings (3 and 4), reduce wear at these vital points and promote easy pedal action. No internal lubrication is required.

ENGAGED



DISENGAGED



*Ford*



ONLY IN A FORD TRUCK do you get your choice of two great engines, the 100-H.P. V-8 or the 90-H.P. Six. ONLY FORD brings you all these long-life features: Easy-turning, rolling-contact steering gear, with triple roller bearings—weather-proofed Hi-Volt ignition—positive control of engine temperature for swift warm-up, protecting bearings, cylinders, pistons, rings and valve mechanism—rear axle design which takes all weight-load off the axle shafts ( $\frac{3}{4}$ -floating in half-ton units, full-floating in all others)—all told, *more than fifty* such endurance-assets!

Where can so few truck dollars get you so much *truck value*? Ford endurance-engineering explains why FORD TRUCKS LAST LONGER . . . why the average age of all Ford Trucks in use is nearly 9 years . . . why 7 out of 11 of all Ford Trucks built since 1928 are still in use! Only the costliest makes match this record. No wonder that demand for new Ford Trucks is forcing production schedules higher and higher. See your Ford Dealer now!

## FORD TRUCKS

MORE FORD TRUCKS IN USE TODAY THAN ANY OTHER MAKE



## Maintenance Control

(CONTINUED FROM PAGE 142)

as received from the division office. Lubrication is locally controlled, based on mileage frequency of the particular truck. Each time a given unit is lubricated, the next lubrication due date for the vehicle is posted.

As a matter of necessity there are, of course, many other forms which we use in the conduct of our maintenance operations. There is the break-

down report, the mechanical road failure report, the vehicle out-of-service report, and two forms for the requisition and transfer of stock to mention but the more important items. But these are considered beyond the scope of this article. We feel that considering the size and disposition of our fleet, that paper work is held to an irreducible minimum.

That, in brief, is the story of Associated's organizational set-up. Of course, changes are still being made almost daily, but we can begin to

point with justifiable pride to such records as 15,500 miles per mechanical road service call attained by one division and to an out-of-service percentage of only 3.19 vehicle attained by the same division during the last tabulated month. Both figures are in for still better performance and along with them a decreasing cost per-ton-mile figure consistent with our all-out effort to keep powered vehicles and trailers at all times in excellent mechanical condition.

(Next month Mr. Gearwar will give CCJ readers full details of Associated's inspection procedures, followed by two additional articles on overhaul procedures and tire maintenance—*The Editors.*)

END

(Please resume your reading on P. 76)

## Teleoptic's FAMOUS "FOG KING"



Precision Built for Efficiency — Durability — Visibility — Accessibility

AUXILIARY  
DRIVING  
LAMPS by

Write for New Catalog

**THE TELEOPTIC CO.**  
1245 MOUND AVE. RACINE, WISCONSIN

### SOCIETY OF FLEET SUPERVISORS

The Society of Fleet Supervisors, comprising fleet representatives in the New York metropolitan area has just completed its first year. The objective of the organization is to promote efficient fleet operation through interchange of ideas on all fleet problems. It is believed to be the first organization of its kind in the country and a primary function is the promotion of fleet supervisors' courses at leading universities.

Present chairman of the organization is G. Edward Terhune, Socony Vacuum Oil Co., Inc., Mt. Vernon, N. Y., and Thomas J. Berk, assistant director of safety, Metropolitan Life Insurance Co., is secretary. All inquiries concerning the society should be addressed to the latter at 3548 95th St., Jackson Heights, Long Island, N. Y.

### WHICH IS IT?



THE SHORTAGE OF SOAP IS FURTHER AGGRAVATING THE SCARCITY OF .....

- ☐ AUTOMOTIVE CASTINGS ☐ TIRES
- ☐ BATTERIES ☐ BUMPERS

Answer on P. 148

**HERE'S  
THE BEST WAY  
TO REPAIR TUBES!**

# THE *INLAND* TUBE VULCANIZER

**...and here's why**

- 1** Failure-proof repairs in your own shop
- 2** No more trouble with synthetic tubes
- 3** Easy and economical to operate
- 4** Handles all size tube injuries and valve stem repairs
- 5** For all size tubes



Now—with the new Inland Vulcanizing Unit in your shop, you can make professional tube repairs that hold up under long, tough highway driving.

Repairs even large breaks safely and dependably in 15 to 18 minutes. Injuries up to 6" long handled in one curing, on both natural and synthetic rubber tubes—plus all size valve stem repairs and replacements.

Eliminates waiting for tubes to be returned to your shop. Inland vulcanized tubes are ready to go back on the job without delay.

Included in this new Unit is Inland's famous thermostatically controlled vulcanizing press PLUS a complete stock of vulcanizing gum, cement, accessories and tools.

Requires little space. An Inland Service Engineer will teach you the few simple operations necessary to make repairs that last the life of the tube. Your automotive jobber has these units in stock now.

Inland Rubber Corporation, a subsidiary of Minnesota Mining and Manufacturing Co.

**BE SAFE      *USE***  
***INLAND***



I want more information about the new Inland Tube Vulcanizing Unit.

Name .....

Address .....

Town .....

INLAND RUBBER CORPORATION  
33 South Clark Street  
Department C51  
Chicago 3, Illinois



## Special Shop Tools

(CONTINUED FROM PAGE 55)

28 x 24 in. tank made of 3/16-in. plate. A thermostat maintains desired temperature. Over the coils is set a rack made of 2-in. angle iron. This protects the coils from injury by the weight or sharp edges of the engines or other objects submerged in the tank.

The tank holds 150 gal. of solvent.

The weight of the liquid, plus the straddle legs of the tank, prevent any chance of being tipped over by the weight of the engine while being placed in, or being removed from, the tank.

The crane is not adjustable for height. Mr. Koch made sure that it would accommodate the type of work his fleet would furnish. The chain block offers enough latitude in variations of height to compensate for the lack of adjustment of the crane.

When the engine has been removed from the bath, it is given a thorough washing with boiling water, under pressure, to remove all traces of grease or oil. The engine block comes out clean. There is no chance of cracks or other damage being hidden by films of oil and layers of heavy greasy road dust.

A drain-cock provides a means of removing the dirt-saturated solvent, when it is desired to pour in a new solution. Heavy sediment is easily reached after pulling out the rack covering the coils. By using the chain block to hoist or lower heavy engines, there is no splashing of the solvent. After cleaning, the engine is held suspended over the tank until all excess solvent drips back.

As shown in Fig. 5A, the crane is simply made of a 5-ft length of 5 1/2-in., O. D., pipe with a 3/8-in. wall. Telescoped inside this pipe is a 7-ft. length of 4 1/2-in., O. D., pipe. A 47-in. length of extra heavy 1 1/4-in., O. D., ammonia pipe passing through the 4 1/2-in. upright forms the cross brace. A 3/4-in. rod forms a strengthening brace by being welded to both ends of the cross brace and to the capped top of the uprights. This construction is shown in Fig. 5B, Detail A.

If desired, the crane can complete a full circle. Grease is packed into the bearing plate on which the 5 1/2-in. section of the upright is welded. Thus when the 4 1/2-in. section is placed in, it turns easily on the greased bearing plate.

As shown in Fig. 5B, Detail B, a 3 1/2-in. angle is welded to the crane side of the tank. Then the 5 1/2-in. pipe is set between the wings of the angles and welded to them. The bearing plate supporting the upright is welded to the bottom of the tank with a piece of 2-in. angle shelf acting as a further support to the plate.

The sketches show all details and dimensions. They also show complete pipe assembly, but many variations can be used according to size of shop and space available. The system is the well-known and simple one based on hot water pushing the cold water ahead of it.

### Exhaust Expelling System

**A**N effective engine exhaust expelling system installed in the garage for removing carbon monoxide (TURN TO PAGE 148, PLEASE)

**Body Men Everywhere Call ECONITE**

**THE**

# FINEST FILLER

**ECONITE STOCKS IN MAJOR CITIES OF THE UNITED STATES**



**HOTTEST ITEM IN THE BODY SHOP FIELD TODAY!**

**ECONITE STOCKS IN MAJOR COUNTRIES OF THE WORLD**

**ADHERES TO METAL • WOOD TILE • GLASS PLASTICS • RUBBER**

**ECONITE FOR EASY PERMANENT BODY PANEL REPAIRS**

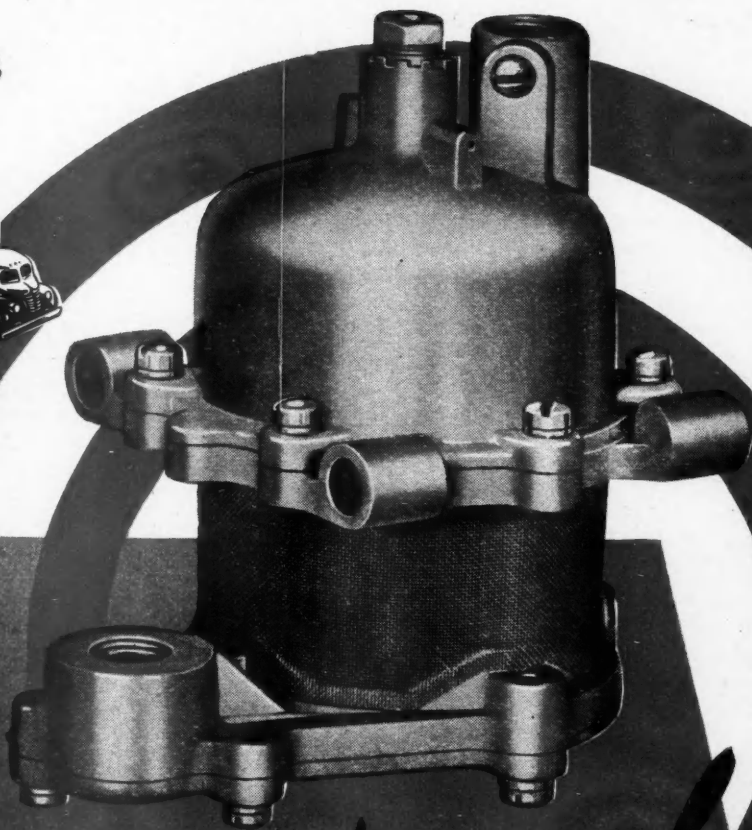
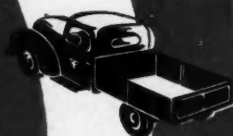
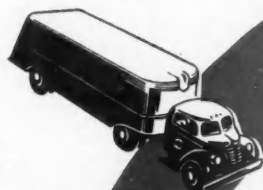
**PERMANENT ADHESION!** Econite Plastic Filler air dries and hardens for sanding to a fine feather edge. Easy to apply! Less costly than metal solder! A plastic, not metallic base, and unaffected by lacquer or synthetics. A "must" in every modern body repair shop!

**ECONITE, INCORPORATED**  
1627 W. Fort St. • Detroit, 16

**JUST APPLY and LET DRY! SAND! FINISH!**  
—your jobber has it, or write direct



# THE NEW CARTER ELECTRIC PUSHER PUMP



## *Stops Vapor Lock*

Six years of thorough testing under every conceivable condition have proven the efficiency of the Carter Electric Pump in preventing hard starting and loss of power or speed caused by vapor lock on hot days or after long, heavy duty runs.

Now used as standard equipment by two of the country's leading bus manufacturers.

Your request will bring you complete information.

A product of the world's largest manufacturer of carburetors, the Carter Electric Pusher Pump provides the user with the same service facilities and policies that have won international goodwill for Carter.

### CARBURETOR

TRADE MARK REG. U. S. PAT. OFF.  
MÁRCA REGISTRADA

## CARTER CARBURETOR CORPORATION

St. Louis 7, Missouri

*Division of American Car & Foundry Company*



428



For Deep Sea Diving  
You Need Special Diving Equipment

## YOUR CARS AND TRUCKS NEED

# PURITAN Super 60 BRAKE FLUID

The heavy duty service of commercial cars and trucks is as different from pleasure car service as a deep sea diver is from an exhibition diver. That's why Puritan developed its Super 60 Hydraulic Brake Fluid especially for heavy duty service.

**BOILING POINT 370°F:** No danger of brake failure due to vaporization.

**POUR POINT 60°F BELOW ZERO:** Remains free flowing and mobile even in Arctic weather.

**NON-GUMMING AND NON-OXIDIZING:** Has a special base that does not gum or oxidize under any operating conditions.

**MOISTURE ABSORPTION:** Capable of absorbing all moisture of condensation — thus protecting wheel cylinders and metal parts against corrosion.

**INERT TO RUBBER:** Does not cause rubber cups to swell or deteriorate.

**MISCIBLE:** Mixes with all other brake fluids. Safe to add to any hydraulic brake system.

Make sure your cars are equipped with Puritan Super 60 heavy duty Brake Fluid, and cut down on your brake system maintenance cost. And for those periodic brake system bleeding and cleaning jobs, there's nothing faster and more effective than Puritan Hydraulic Brake Flushing Fluid. Get both from your NAPA jobber.



## Special Shop Tools

(CONTINUED FROM PAGE 146)

gas, is shown in Fig. 6. This is a commercial outfit employing 6-in. sheet metal pipe wired to the I-beam roof supports. An angle-iron frame, welded to the I-beam, forms the support for the motor and fan assembly. The pipe leads to the outside and is supported from the ceiling by baling wire.

The duct leads from the blower down to within 10 in. of the floor, as shown in Fig. 6A. The 10-in. opening at the bottom permits any stray fumes to be drawn up. The duct is purposely led so close to the floor because of the fact that monoxide is a heavy gas, laying low.

Each system (there are three) has three ports cut in the bottom duct to take the flexible connecting hoses. Each system can easily exhaust four trucks, because a fourth hose can be thrust up the open end of the bottom of the duct.

There is plenty of suction created by the fan to remove all fumes easily. It is driven by a 1/4-hp. squirrel-cage motor. The blades of the fan are fixed directly to the shaft of the motor. The motor is mounted 13 ft. 4 in. above the floor with a starting switch mounted to the I-beam column. This is not a shop ventilating system in the accepted sense of the term. It is a system primarily intended to remove exhaust fumes led directly to it. So Mr. Koch does not commit himself by giving this system any definite shop area to ventilate. Regular window insert type ventilators are used for ventilating the shop.

The blower itself has 8-in. blades driven at 1040 r.p.m. The efficiency is above reproach, keeping the shop remarkably free of exhaust fumes; even in winter when all windows and doors are kept closed.

**END**

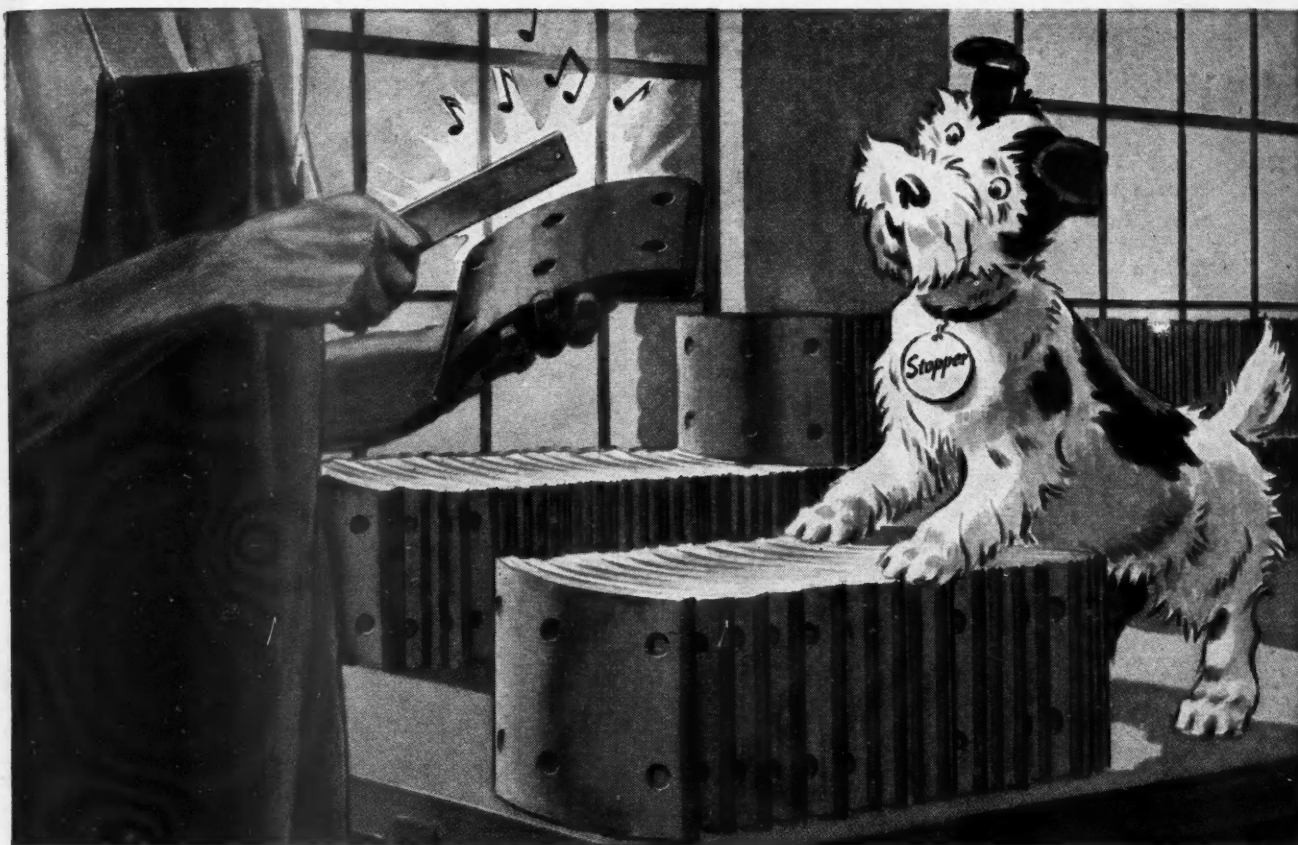
(Please resume your reading on P. 56)

## • WHICH IS IT?

ANSWER... (To Question on P. 144)

Tires. Synthetic rubber cannot be made without soap. More than 60 million pounds of soap are required each month by synthetic rubber plants now in operation. This is about 6 per cent of all soap consumed in this country.

(Another Cartoon Quiz is on P. 152)



## "Maybe he's a Swiss Bell-Ringer," I yipped



I've got friends everywhere in the American Brakeblok plant, but one special pal works in the Inspection Department.

One day I'd just about talked him into scratching me between my ears when I saw another fellow going through some strange motions. He'd hold a piece of brake lining close to his ear and then tap it—looking pleased with the noise it made.

"Maybe he's a Swiss Bell-Ringer," I yipped helpfully.

"Stopper, there's a better explanation than that. He's an inspector looking for sub-surface defects. He can tell by the clear tone when he taps the lining that it is perfect all the way through," my pal told me.

"You do some of the doggondest things around here," I barked.

But this care taken in the inspection

of American Brakeblok Brake Lining is important to you.

If you are in the brake service business, rigid control of quality means satisfied customers, fewer adjustments, more profit from every relining job.

If you are responsible for a fleet operation, American Brakeblok is ready with the right lining for the most efficient and safest operation under the specific conditions you face.

Painstaking inspection is a "must" at American Brakeblok because of our policy to manufacture the best brake lining that can be made.



Distribution through 38 NAPA Warehouses



AMERICAN BRAKEBLOK DIVISION

**American  
Brakeblok**  
BRAKE LINING



# Nation-Wide



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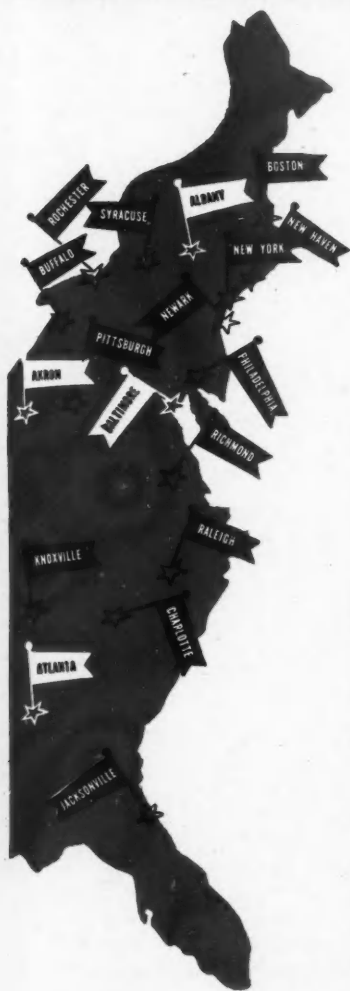
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H. & H. Wheel Service, Inc.  
GRAND RAPIDS  
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Auto Wheel & Rim Service  
MEMPHIS  
Beller Wheel, Brake & Supply Co.  
MILWAUKEE  
Stone Manufacturing Co.  
MINNEAPOLIS  
Wheel Service Co.

MOLINE  
Mutual Wheel Co.  
NEWARK  
Automotive Safety Inc.  
Wheels, Inc.  
NEW HAVEN  
Connecticut Wheel & Rim Co.  
NEW ORLEANS  
Southern Wheel & Rim Co.  
NEW YORK  
Wheels, Incorporated  
OKLAHOMA CITY  
Southwest Wheel Inc.  
OMAHA  
Morgan Wheel & Equipment Co., Inc.  
PEORIA  
Peoria Wheel & Rim Co.  
PHILADELPHIA  
Kay Wheel Sales Co.  
PITTSBURGH  
Wheel & Rim Sales Co.  
PORTLAND  
Six Robbles, Inc.  
RALEIGH  
Carolina Rim & Wheel Co.  
RICHMOND  
Dixie Wheel Co.  
ROCHESTER  
Frey, the Wheelman, Inc.

SALT LAKE CITY  
Henderson Rim & Wheel Service  
SAN ANTONIO  
Southwest Wheel, Inc.  
SAN FRANCISCO  
Wheel Industries, Inc.  
SEATTLE  
Six Robbles, Inc.  
SOUTH BEND  
Wire & Disc Wheel Sales & Service  
SPOKANE  
Bearing & Rim Supply Co.  
SPRINGFIELD, ILL.  
Illinois Wheel & Brake Co.  
SPRINGFIELD, MO.  
Borbein, Young & Co.  
ST. LOUIS  
Borbein, Young & Co.  
SYRACUSE  
Colbourn Wheel & Rim Service, Inc.  
TACOMA  
Six Robbles, Inc.  
TOLEDO  
Wheel & Rim Sales Co.  
WICHITA  
Borbein, Young & Co.  
EXPORT  
G. O. Brandes—Cleveland

## DISTRIBUTING ORGANIZATION



**that renders a great service to fleet owners, tire dealers and truck dealers**

Starting years back, Budd realized that its responsibility to users of Budd Wheels must go farther than designing, manufacturing and selling a superior wheel. Consequently, we have given much care to building the Budd distributing and service organization.

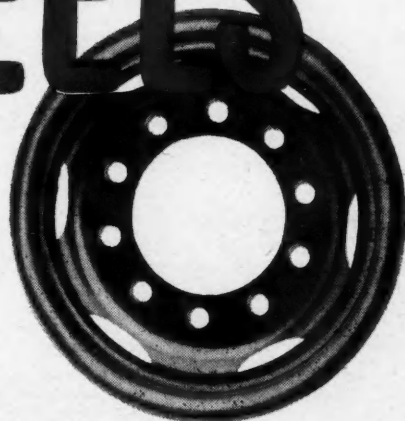
No matter where you are there is a Budd Wheel distributor near with a staff of experts ready to work with you on getting the best results from your equipment.

You'll find that the Budd Distributor not only has a helpful advisory service to offer but he also carries a large stock of the many sizes and types of Budd Wheels and parts for all kinds of trucks, buses and trailers.

It's a good policy to call in the Budd Wheel man now and then and let him see if he has a recommendation that will save you money. The Budd Company, Detroit.

# BUDD WHEELS

**THE ONLY WHEELS WITH COLD TAPERED DISC**



## New Products

(CONTINUED FROM PAGE 58)

The new pumps are now available for Chevrolet passenger cars and trucks, models 1937 through 1946. Models for other current makes are expected to be placed on the market in the near future.

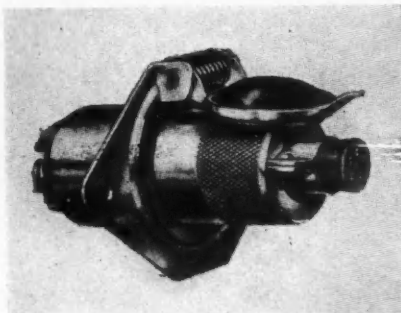
**Use Free Postcard For More Details.**

### P107. Heavy-Duty Connector

A new heavy-duty trailer connector, available in four and six-contact units, is offered by Joseph Pollak Corp., Boston. The connectors feature a spring locking

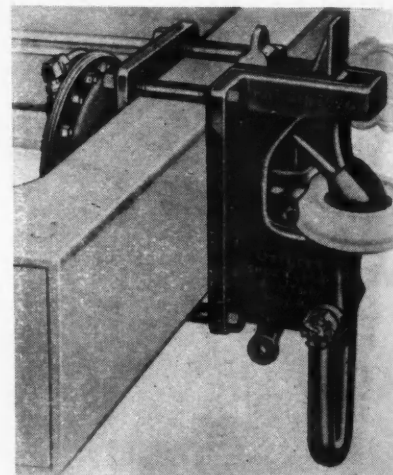
cover that holds the plug firmly in place and heavy sliding connectors.

**Use Free Postcard For More Details.**



### P.108. Shockless Pintle Hook

A war-proven shockless pintle hook is now available from the Utility Trailer Mfg. Co., Los Angeles. Air, tapped from the



constant pressure line, provides constant cinch pressure on the trailer tongue eye thus eliminating virtually all banging and slamming between truck and trailer. The hook will take a standard 2 1/4 in. eye coupling and can handle g.v.w. combinations up to 78,000 lb.

**Use Free Postcard For More Details.**

### P109. 60-Ton Hydraulic Press

A new 60-ton hydraulic press with movable head has been developed by the Manley Mfg. Div. of American Chain & Cable Co., Inc., York, Pa. Three pressure ranges, 0-15, 15-30, 30-60 ton are available by flipping an indicator knob. Head and pump are streamlined, totally enclosed units. Additional features include adjustable pump handle, cable-operated and self-locking table raising mechanism, and auxiliary arbor press for light jobs.

**Use Free Postcard For More Details.**

(TURN TO PAGE 155, PLEASE)



- Accurate 30 Second Test
- Tests Before Charge
- Automatic Time Switch
- Exact Charging Time
- High Rate Discharge

The Marquette "180" Hi-Rate Charger combines all the essentials to give you Speed where you need it most—Speed in Testing! You know in a jiffy the *Exact* Battery Condition and *Exact* Charging Time. Entirely automatic, "Just set it and forget it" . . . the Automatic Time Switch shuts off charger at end of charging period.

New type sensitive Circuit Breaker protects both battery and charger against accidental overloads and reversed leads. Cycling Rejuvenates sulphated batteries. Individual Cell Check. 100 ampere capacity even on low line voltages.

Ask your Marquette Distributor to show you the new Marquette "180" Hi-Rate—he will point out its many Money Saving features.

SOLD EXCLUSIVELY THRU THE NATION'S LEADING DISTRIBUTORS

# MARQUETTE

REGISTERED U.S. PAT. OFFICE

# Automotive

## EQUIPMENT

### BATTERY CHARGERS

A.C. ARC WELDERS • ELECTRODES

GAS WELDING And CUTTING EQUIPMENT

ACETYLENE GENERATORS • ACCESSORIES

MARQUETTE MFG. CO. INC.  
MINNEAPOLIS 14, MINN.



A FORMER SCHOOL TEACHER OF TIFFIN, OHIO WAS THE INVENTOR OF THE SELF-STARTER. HE IS.....

- |                                      |  |
|--------------------------------------|--|
| <input type="checkbox"/> J. WILLARD  | <input type="checkbox"/> C. F. KETTERING |
| <input type="checkbox"/> W. K. EATON | <input type="checkbox"/> THOMAS EDISON   |

Answer on P. 155



*It's ATOM-O-LYTIC...*

puts atoms to work to prevent cooling system troubles!

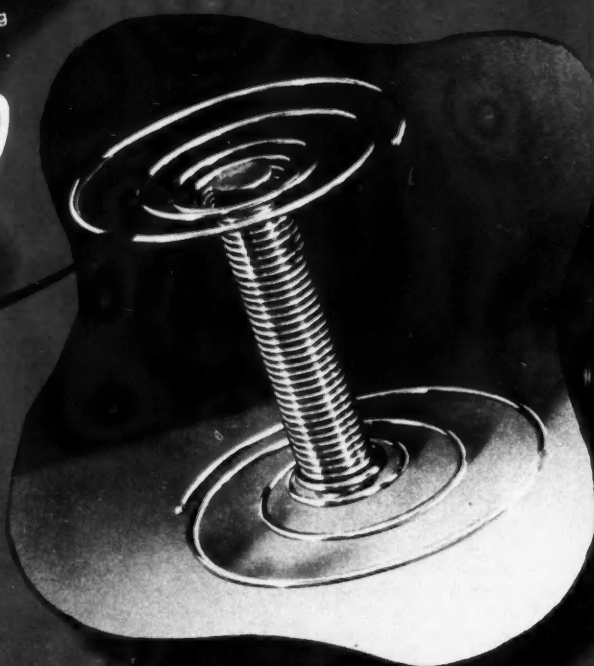
*It's GUARANTEED*

to protect against rust and scale for one year or 25,000 miles in automobiles, trucks and buses—one year or 1000 operating hours in tractors or stationary engines.

Here's the latest—and best—in prevention of cooling system troubles.

Butler De-Scaler, inserted in radiator, removes scale and rust and prevents further scale formation—automatically. Keeps water clean . . . saves cost of boiling out . . . stops "hot spots" . . . eliminates radiator and water-pump repairs . . . saves gas and oil . . . keeps thermostat and heater operating efficiently.

And operates at peak efficiency for a minimum of 1 year or 25,000 miles or (tractors) 1000 operating hours—guaranteed.



# BUTLER De-scaler

COOLING SYSTEM

AND RUST ELIMINATOR

MODEL ATI

\$2.97 IN LOTS OF 12 \$4.95 A PIECE

Butler De-Scalers are Patented  
Other U. S. and Foreign Patents Pending

## Non-Chemical—Silver-Plated

The ATI De-Scaler unit is comprised of silver-plated spring and core of special Butlmetal. Interaction between dissimilar metals, when immersed in mineral-carrying water, causes an atomic reaction.\* Particles of Butlmetal attach themselves to minerals in water causing them to drop to bottom of radiator. Mineral-free water then attacks scale, loosening it and dissolving it, whereupon atomic action again goes to work to precipitate dissolved minerals. Electro-chemical action between dissimilar metals stops corrosion . . . water stays nearly neutral, preventing acid or alkaline damage to metal.

## Guarantee

The Butler De-Scaler is unconditionally guaranteed both as to workmanship and performance. It is designed to operate efficiently for a minimum of one year or 25,000 miles in automobiles, trucks and buses, 1000 operating hours in tractors. After installation, if for any reason you are not satisfied, you may within the guarantee period return the unit for full purchase price refund to Butler Engineering Co., 926 Magazine Street, New Orleans 11, La.

No responsibility is assumed in case of failure to follow directions for flushing system or in case of leakage developing from removal of old scale.

## CURE Your Cooling System Troubles —Don't NURSE Them

Butler De-Scaler puts an end to loss in efficiency which wastes oil and gas . . . frequent cleaning due to water scale formation and rust accumulation . . . repairs necessitated by corrosion of metal and damage caused by scale particles.

Put in the De-Scaler and forget the cooling system. Both the engine and you will keep cool under the collar.

Order Butler De-Scalers on the card (see reverse)

\*For a technical explanation of "ATOM-O-LYTIC" action write us for treatise by Dr. T. B. Crumpler, Head of Chemistry Department, Tulane University, and Research Consultant for Butler Engineering Company.

## BUTLER ENGINEERING COMPANY

**Electronolytic Equipment  
for Water Correction**

926 Magazine Street  
New Orleans, La.

Copyright 1946, Edgar M. Butler

Printed in U. S. A.

# No "Inhibitor" Can Touch This "ELIMINATOR"



The purpose of the cooling system is to take away engine heat.

Obviously, anything that interferes with transfer of heat from combustion chamber to water is harmful to the engine.

Scale formation does interfere with heat transfer. It coats the metal with a thick covering that helps to keep the heat in. It clogs up passageways so that the heated water has difficulty reaching radiator to be cooled.

That's why it's important to get rid of scale.

That's why it's important to use a scale and rust eliminator—not just an "inhibitor".

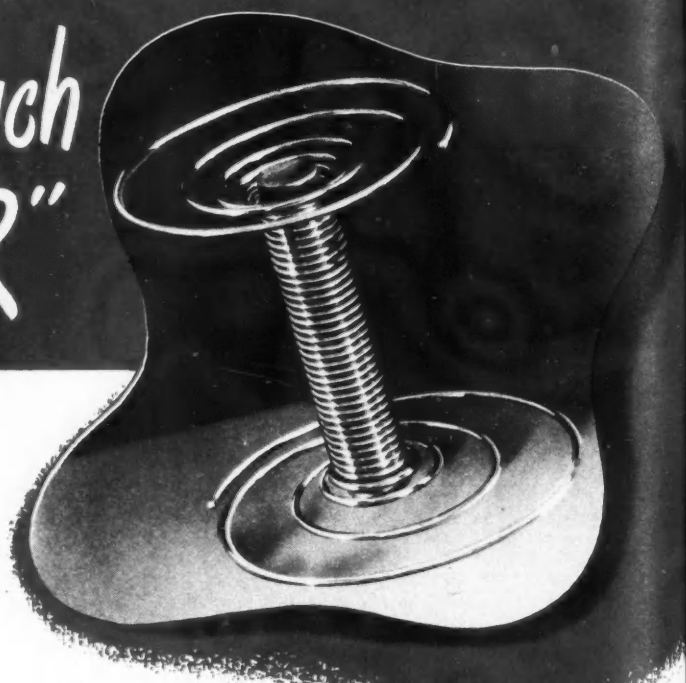
The Butler De-Scaler doesn't cover up scale and rust so the water will look clean. It removes scale and rust so the metal will be clean . . . so that heat will pass efficiently from engine to water and from water to outside air.

Other superiorities of Butler De-Scaler: automatically controls both acidity and alkalinity . . . maintains efficiency (no gradual dilution) . . . safe to use with anti-freeze and stop-leak . . . harmless to rubber and metal.

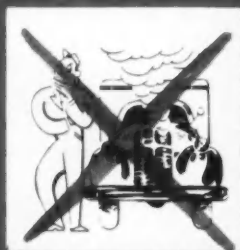
Install the Butler De-Scaler. Operate for 15 days (old engine) or 30 days

(new engine), then drain—out will come the accumulation of loosened rust and scale. Operate some more—watch how much cleaner the water is. How much cooler the engine runs. In new cars, it is usually unnecessary to change the water again during the life of the De-Scaler!

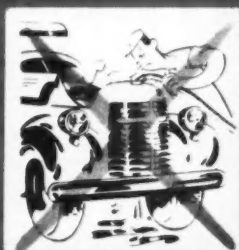
Order Butler De-Scaler now. Only \$2.97 for such complete engine protection! Write your order in the space below—mail—pay C.O.D. or ask us to bill you next month.



**It's CHEAPER to install the Butler De-Scaler than to continue paying the costs of**



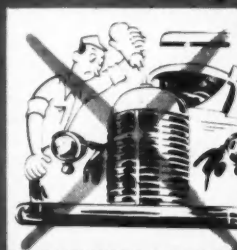
Delays due to boiling-over . . . waste of gas and oil due to engine over-heating.



Boiling-out and back-flushing radiator to remove rust and mud.



Radiator, water-pump and other repairs due to corrosion attack.



Periodic chemical treatment—frequently repeated because of dilution.



Valve and ring troubles, due to carbon deposit resulting from engine heating.

**Guaranteed for a Minimum of 1 Year or 25,000 Miles in Automobiles, Trucks and Buses; 1 Year or 1000 Operating Hours in Tractors and Stationary Engines**

**How About Anti-Freeze?** Butler De-Scaler is OK to use with anti-freeze solution. And by keeping solution free from mud, rust and scale particles, it contributes to accurate hydrometer reading.

**Don't Wait for Rust to Show, Scale Starts Forming Immediately.** By the time

rust appears in the water, the damage is well on its way.

Scale and corrosion start with the first turn of the engine. So protection should start with the first turn of the engine. Keep the water permanently crystal-clear—install Butler De-Scaler now.

## BUTLER ENGINEERING COMPANY

P. O. Box 1699, New Orleans 11, La.

Gentlemen: Please ship (fill in quantity\*) . . . Butler De-Scalers at \$2.97 (in lots of 12, or \$4.95 apiece in smaller quantities) to COMPANY . . .

STREET . . .

CITY . . . ZONE . . . STATE . . .

SHIP C. O. D. . . . BILL NEXT MONTH . . .

MY JOBBER IS . . .

\*Systems having a capacity greater than 30 quarts require one unit for each 30-quart capacity or fraction thereof. Operators of large Diesel engines should write for recommendation of proper unit to fit equipment.

**BUTLER**  
COOLING SYSTEM

# De-scaler

**AND RUST ELIMINATOR**

Model AT1

**\$2.97** (in lots of 12, \$4.95 apiece)

USE THIS CARD TO ORDER "The Little Silver-Plated De-Scaler That Cuts Repair Bills All Over the Engine."

Manufactured by Butler Engineering Company, P. O. Box 1699, New Orleans 11, La. Manufacturers of water correction equipment for automotive and industrial requirements—hot water, steam, Diesel. Butler De-Scalers are patented; other U. S. and foreign patents pending.

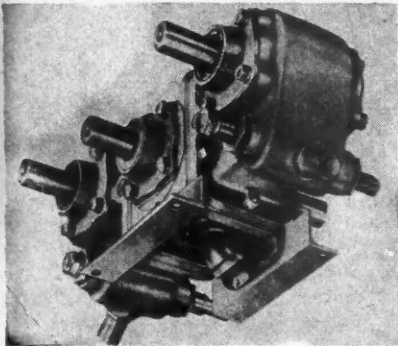


## New Products

(CONTINUED FROM PAGE 152)

### P110. Special Power Divider

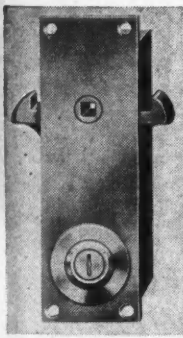
A new item of truck equipment has been developed by H. S. Watson Co., San Francisco. It is called a power-divider and has been especially built to simplify driving of two independent pumps on tank-trucks distributing fuel oil or other petroleum products. Pumps can be operated simultaneously or independently as required. It is also available with a third shaft extension for driving of hose reels or other equipment.



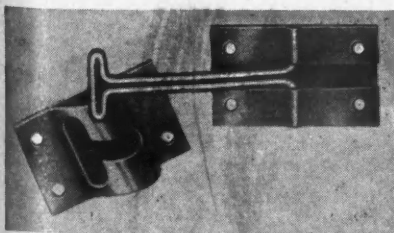
The Watson Divider is available in various speed combinations to drive practically any pump at its correct speed without racing or lugging the engine. The power-divider is direct driven by a needle-bearing shaft from a power take-off mounted on the truck's transmission.

Use Free Postcard For More Details.

### P111. New Body Hardware



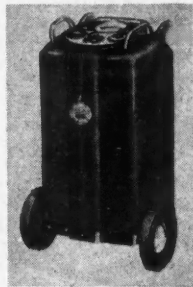
The second is a positive door holder hook and keeper assembly, designed for minimum projection and affording positive



door holding. Hook must be manually operated from keeper before door can be closed.

Use Free Postcard For More Details.

### P112. Fast Charger-Tester



Marquette Mfg. Co., Minneapolis, presents a new Model 180 Hi-Rate Charger. It features speed in charging, and speed in testing with an accurate 30-second Testing System that tests before the charge. 100-amp. capacity. Copper

Oxide Rectifier. Fully Automatic.

Use Free Postcard For More Details.

(TURN TO NEXT PAGE, PLEASE)

## • WHO INVENTED IT?

ANSWER... (To Question on p. 152)

Charles F. Kettering, who is now head of the General Motors Research Laboratories.

(Another Cartoon Quiz is on P. 156)

### Crash-Proof Tank

A possible development in safety is a rubber "crash-proof" fuel tank for trucks. Tests are now under way by U. S. Rubber Co., but it is thought that adoption of the tank, if proved practical, will be some time away.



"Musta been usin' a Champion Grille-Guard!"

Your truck can keep going, too —when it's protected "up front" by a Champion Grille-Guard.

Remember, the delay caused by front end damage may be more costly than the repair itself.

Drivers will tell you that many delays and repairs are avoided by using a Champion Grille-Guard.

That's because its heavy-duty construction guards your fenders, headlamps, radiator grille, radiator, and other hard-to-get parts from unforeseen mishaps.

So make sure that your trucks will keep right on going. See your truck dealer or write The Truckstell Co., Union Commerce Building, Cleveland 14, Ohio.



- Extra Strong
- Rustproofed throughout
- Easily installed
- Protects entire front end

## CHAMPION GRILLE-GUARDS

Manufactured by  
TURNER EQUIPMENT CO.  
DETROIT, MICHIGAN



**TRUCKSTELL**

SPECIALIZED EQUIPMENT FOR PLUS PERFORMANCE

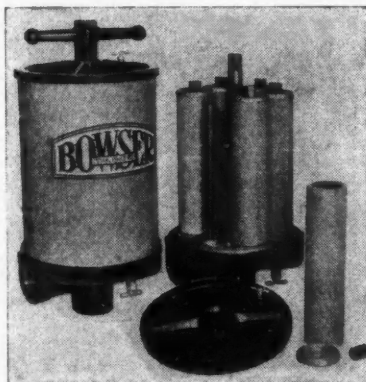


## New Products

(CONTINUED FROM PAGE 155)

### P113. New Cartridge Filters

Ten sizes in three new models of expendable cartridge filters are now reported in production at Bowser, Inc., Fort Wayne. The new type filters adaptable for fuels, lubricants and other liquids contain replaceable, resin-impregnated, cellulose elements which remove particles as small as 1 micron (.000039 in.) from liquids with viscosities up to 600 s.s.u. and temperatures as high as 350 deg. F. The cartridges

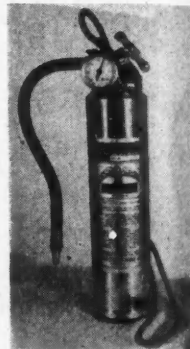


are neutral, contain no chemical bleach and will not remove additives or inhibitors, or affect the color of the filtered liquid except by the reduction or removal of foreign matter. Capacities range from 2/5 to 300 gal. per hour with filtering areas from .2 to 100 sq. ft.

Use Free Postcard For More Details.

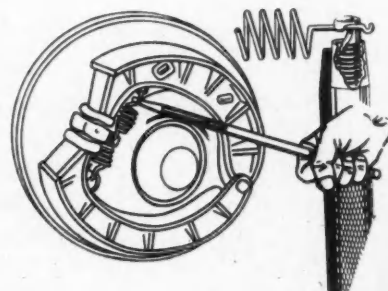
### P114. Fire-Fighting Weapon

A new stored-pressure hand extinguisher which eliminates all pumping is announced by Union STOP-FIRE Corp., Brooklyn, N. Y. A quick flick of the readily accessible valve releases an instantaneous stream of fluid. Carbon dioxide combined with carbon tetrachloride is used as the chemical agent. A pressure gage attached to the extinguisher indicates fluid pressure at all times. Approved by Underwriters' Laboratories. Use Free Postcard For More Details.



### P115. Spring Removing Tool

A new Safe-T-Grip spring tool made by Thermacote Mfg. Co., Los Angeles, makes the installation or removal of coil springs

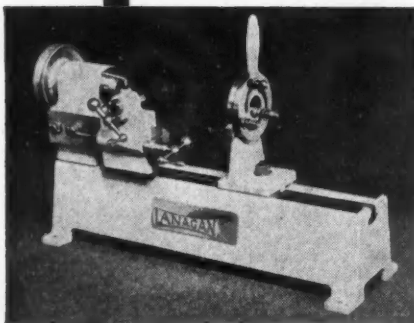


on brakes, clutches, etc., quicker, easier and safer. Cut-away drawing shows how (TURN TO PAGE 158, PLEASE)

FOR COMPLETE ARMATURE *Service*

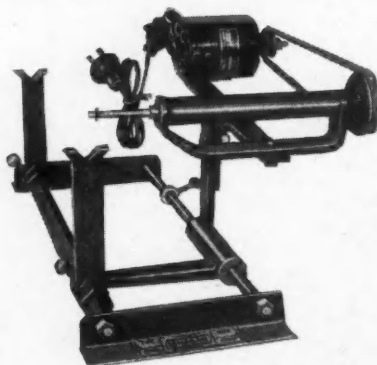
## LANAGAN'S { ARMATURE TURNING TOOL MICA UNDERCUTTER

Lanagan's Model 400 Armature Turning Tool is designed to turn armatures with the machined accuracy of a jeweler's lathe—yet it's low in cost! When it is combined with Model 431 Mica Undercutter, you are buying complete and efficient armature service.



**Model 400 Armature Turning Tool.** Hardened and ground draw-in collets for holding armature. Slide rest mounted on heavy dovetail bar, extremely rigid, and non-chattering. Automatic take-up for wear. Instantly adjustable steady rest, self-locking. Will take standard 5/16" cobalt high speed bits. Accommodates armatures up to 4" in diameter.

**Model 431 Mica Undercutter.** Will take armatures from 1" to 9" in diameter, and lengths up to 18". Adjustable for size and wear take-up. Saw can always be lined up with center of work. Equipped with these high-speed saws: three .025", three .020", three .015". All saws 5/16" in diameter.



**LANAGAN and HOKE, Philadelphia 44, Pa.**

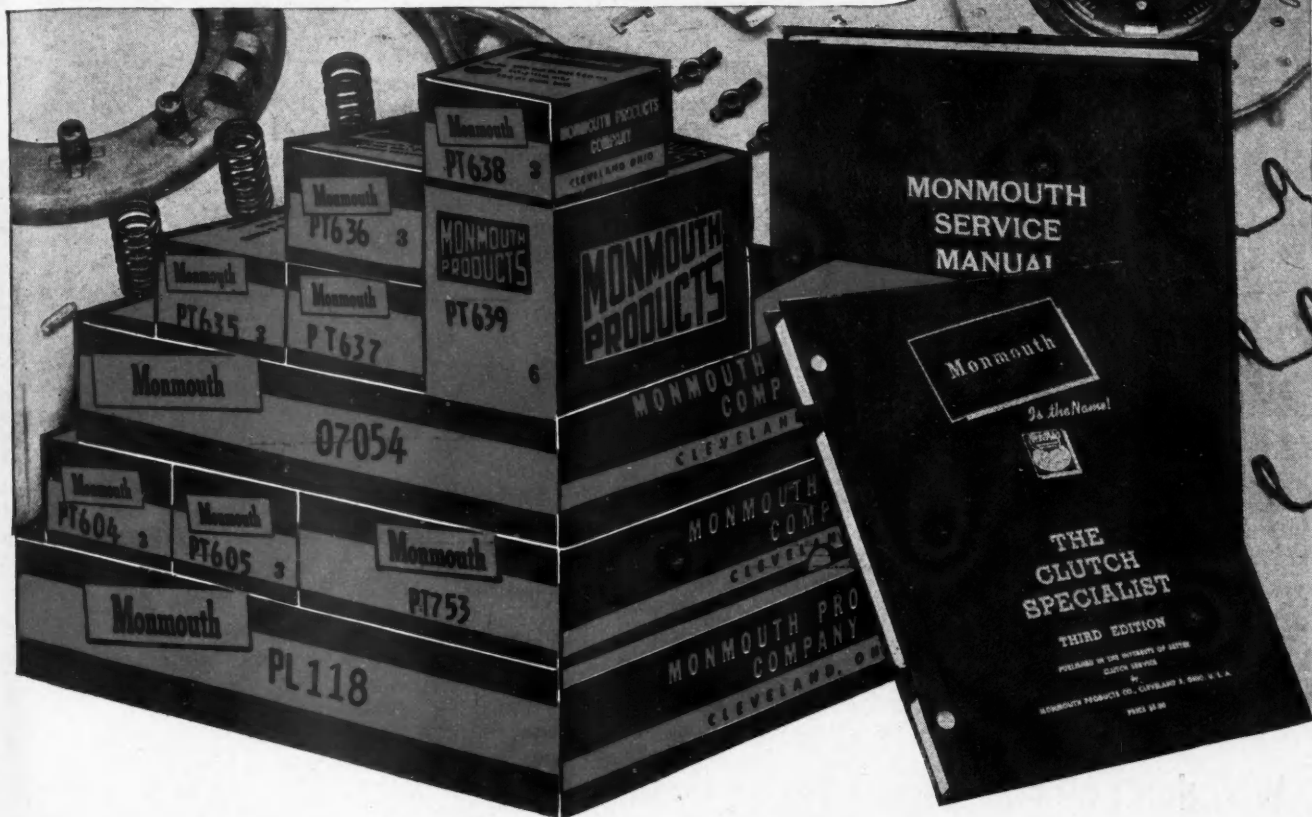


**NESA** WINDSHIELDS LOOK LIKE ORDINARY WINDSHIELDS, BUT THEY ARE ...

- ☐ ABSOLUTELY UNBREAKABLE, NOT JUST SHATTERPROOF
- ☐ SELF-DEFROSTING ☐ GLARE-PROOF
- ☐ MADE ENTIRELY OF PLASTIC

Answer on P. 158

# CLUTCH PROBLEMS?



THINK FIRST OF

*Monmouth*

for complete parts and technical service



*Your NAPA Jobber is a Good Man to Know!*

The Monmouth Clutch Parts Line is complete for all cars, trucks, buses and most off-the-road vehicles. Example—a typical automotive assembly as required by popular make cars is illustrated. Each part, or group of parts, packaged for your convenience in ordering and handling. Quality of each part is unexcelled because of Monmouth's superior

manufacturing standards. Technical service is also complete, consisting of the Clutch Specialist—the Service Manual and the complete series of Bulletins covering correction of clutch troubles and rebuilding of clutches.

For all clutch problems, think first of Monmouth. Branch Reconditioning Plants—New York, N. Y., Dunn, N. C., Memphis, Tenn.

MONMOUTH PRODUCTS COMPANY • CLEVELAND, OHIO

FOR ENGINE BEARINGS  
CLUTCH PLATES AND PARTS  
CHASSIS PARTS

**Monmouth**

Trade Mark

*is the name*

## New Products

(CONTINUED FROM PAGE 156)

neck of spring is held securely in tip of tool with a few turns of the handle. Long handle provides leverage for stretching springs.

*Use Free Postcard For More Details.*

### P116. Dressing Fixture

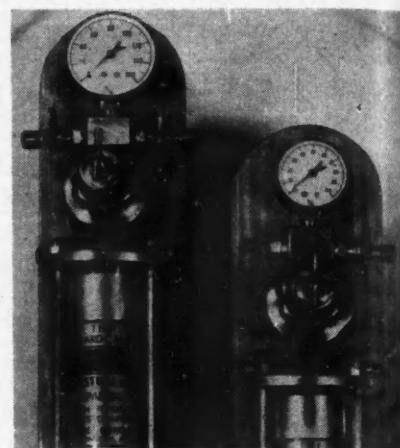
A precision wheel and tool dressing fixture, known as Gem-Flex, is announced by Allied Machinists of Waltham, Mass. According to the makers it is capable of forming any angle as well as any number of inside

and outside radii, forming tool bits, small dies and thread chasers. Makes exceptionally flexible indicator stand, handles drilling and light mill work, and, as a surface gage, scribes circles in either vertical or horizontal plane.

*Use Free Postcard For More Details.*

### P117. Air Line Filter Unit

Beach Precision Parts Co., Boonton, N. J., is offering a new Sta-Dri air conditioning unit designed for permanent installation in any shop's compressed air system. According to company announcement, the unit extracts moisture and oil fumes, screens out rust and dirt, regulates



pressure to any desired lower pressure and gages final pressure on the dial. Replaceable filter elements are easy to install. Unit available in two sizes: Model A-1 with capacity of 30 cu. ft. per min. and Model A-2 for 65 cu. ft. per min. Prices are \$20.50 and \$34.50 respectively, f.o.b. Boonton, N. J.

*Use Free Postcard For More Details.*

### P118. Safety Switches

A line of automatic safety switches to be used in conjunction with either oil pressure or water temperature gages has been intro-



duced by Frank W. Murphy, Tulsa, Okla. The adjustable silver-contact switch automatically closes an electrical circuit when pressure or temperature goes below predetermined limits. Wiring may be arranged to ground the ignition circuit or activate a warning light or buzzer. Switch may be mounted visibly in side of gage or at the rear of instrument.

*Use Free Postcard For More Details.*

(TURN TO PAGE 220, PLEASE)

## ● WHAT'S NEW?

**ANSWER...** (To Question on P. 156)

"Nesa" glass, a development of Pittsburgh Plate Glass Co., is used in self-defrosting windshields. Nesa is a film which is applied to glass. This film serves as an electrical conductor. Passage of current results in heat, which de-ices and de-fogs the windshield.

(Another Quiz Cartoon on P. 224)

CAR OWNERS WANT TO KNOW

## WHAT'S THE REASON?



**Why don't all gas tanks fill from the same side?**

**REASON:** Gas tanks always fill on the side opposite the exhaust, the position of which is determined by the individual manifold characteristics of the engine.



**Why do RUSCO Fused Fabric Clutch Facings give better service longer?**

**REASON:** All Rusco Fused Fabric Friction Material is made by an exclusive patented process which results in a product not only denser in mass, but one internally interlocked to resist wear and centrifugal force. Rusco Fused Fabric Clutch Facings are original equipment on many of America's finest cars.

**"THE STANDARD OF THE INDUSTRY"**

THE RUSSELL MANUFACTURING CO., Middletown, Conn.



HOW KIN US REPAIR GUYS FIX UP THEM  
OLD ENGINES THAT THEY WISH ON US  
NOWDAYS...WE AIN'T MAGICIANS.

PATCHWORK PETE

USE THE  
MACHINE SHOP  
SERVICES OF YOUR  
THOMPSON PRODUCTS  
JOBBER

PETE TAKE 'UM TIP HE  
DO JOB OKAY...DO 'UM  
EASIER, HEAP BETTER.

PEE WEE

IT'S TRUE THAT REPAIRMEN are called upon to keep more old cars, trucks and buses in service than ever before. Yet with Thompson engine and chassis parts, many of these mechanics are performing miracles in salvaging vehicles that normally would be towed to the junk yards.

And with the modern machine shop

service offered by TP Jobbers, mechanics and shops with limited facilities can confidently take on the major jobs and complete rebuilding jobs that are necessary to keep old models on the road, delivering many more miles of *safe, economical* transportation.

Let  
Your

Thompson

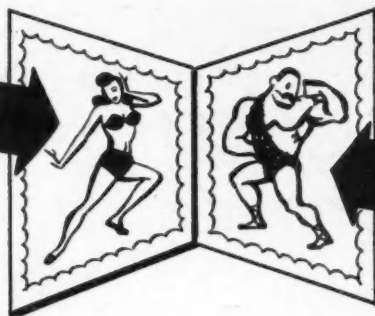


Products

Distributor  
Work for You

CLEVELAND • DETROIT • LOS ANGELES

*the Body Beautiful*



*the Body Durable*

WONDERFULLY WEDDED IN THE

# KRIEGER custom styled van

*All that you'd expect in the finest custom-built truck body, you get . . . and more . . . in the Krieger Custom-Styled Van! For example:*

Styled by leading truck designers, the Krieger Van's smooth graceful lines make your truck a handsome advertisement for your company as it rolls through the streets. Furthermore, it is just as *tough and durable as it is beautiful!* Its all steel construction, built by men who know steel, is positive assurance that the fine appearance you prize in a new body will *stay that way* for years!

Yet the Krieger Van's beauty and durability is but a *single one* of *ten* outstanding features! That's why it has caused such a sensation in trucking circles! See for yourself . . . convince yourself. If your local body-builder is not a franchised Krieger dealer, write us directly, and we will give you the name of the Krieger dealer nearest to you.



- 1 — Strength of All-Steel Construction
- 2 — Simplicity of Interlocking Sections
- 3 — Beauty and Durability of Custom-Built Bodies
- 4 — High Tensile Steel for Extra Strength, Lighter Weight
- 5 — Allows 20% to 30% Extra Payload
- 6 — Available in Body Lengths of 12', 14', 16'
- 7 — All Steel Top
- 8 — Eases Maintenance
- 9 — Damaged Sections Quickly Replaceable
- 10 — Cuts Repair Costs

## 10 ALL-STAR FEATURES

**KRIEGER STEEL SECTIONS, INC.**

11-11 34TH AVENUE  
LONG ISLAND CITY, N. Y.





TAKE A TIP FROM ONE WHO SPEAKS FROM EXPERIENCE

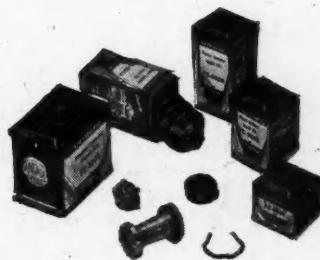
**For Better Brakes..**

**REMEMBER YOUR**

**3 R's**

**1 REPAIR** WITH GENUINE **Wagner**  
**LOCKHEED HYDRAULIC BRAKE PARTS**

Recommended for superior quality, perfect fit, and dependable performance. Backed by Wagner's years of experience in designing and manufacturing brakes for original equipment.



**2 REFILL** WITH GENUINE **Wagner**  
**LOCKHEED HYDRAULIC BRAKE FLUID No. 21**

No. 21 is an all-season, dependable fluid that mixes with all other approved brake fluids. It is used by car and truck manufacturers, and is recommended for all hydraulic brakes.



**3 RELINE** WITH GENUINE **Wagner**  
**CoMaX BRAKE LINING....**

Unsurpassed for quick, safe, smooth stops, and for long-wearing qualities. The CoMaX line provides *complete coverage for all brakes*. In rolls, sets, blocks or slabs.

*For details, consult nearest Wagner jobber.*



**Wagner Electric Corporation**  
6470 PLYMOUTH AVE., ST. LOUIS 14, MO., U.S.A.



A47-1

LOCKHEED HYDRAULIC BRAKE PARTS and FLUID • **NaRel**  
CoMaX BRAKE LINING • AIR BRAKES • TACHOGRAPHS  
ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES

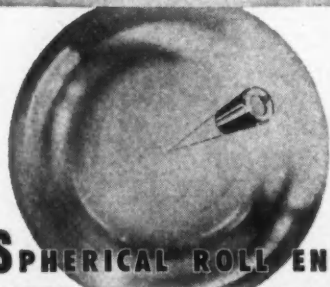




## SPHER-O-HONED

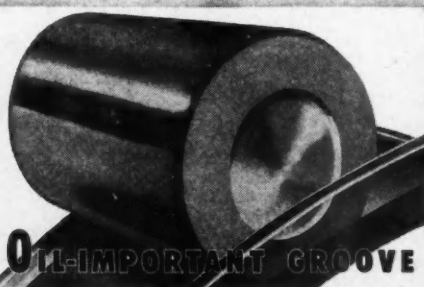
Published here for the first time in complete form is a trade mark representing three outstanding design features of Bower Tapered Roller Bearings. These exclusive Bower features account for micro-inch precision, rigid roll alignment, smooth operation, long life and other

advantages. It is now possible, with this combination of design features, to permanently install Bower Tapered Roller Bearings without the necessity of a running-in or wearing-in period or any "final adjustment". Bower design is most effective where most important.



**SPHERICAL ROLL END**

The large end of each roll is so finished that its contour takes the form of a segment of a true sphere and exactly fits the inverse spherical contour of the flange against which it operates.



**OIL-IMPORTANT GROOVE**

An oil groove holding a generous supply of lubricant guards against oil failure at this critical point, where the roll end thrusts against the flange, a point where the lubrication problem is most serious.



**HONED FACE-LIFT**

After rough and finish grinding, bearing surfaces are honed down to base metal with accuracy as fine as 3 micro-inches (millionths of an inch). Wear is effectually reduced and operating life prolonged.

AC'S ASSURE UTMOST RELIABILITY



## W-I-D-E-R HEAT RANGE FOR EACH PLUG

### *definitely assures you Better Performance*

No matter how well pleased you have been with other spark plugs, you will find today's *AC Spark Plugs for commercial vehicles* more satisfactory.

They stay clean longer. They accommodate a wider variation in engine temperatures and operating conditions. They hold their gaps longer. They give you more of the engine power that fuel and power plant can generate. They require less frequent service and replacement.

If you aren't using these AC's now, give them a trial. This wider Heat Range per plug is one of AC's most important engineering accomplishments. It is worth thorough investigation.

AC SPARK PLUG DIVISION  
GENERAL MOTORS CORPORATION

★ ★ ★

JANUARY, 1947

Use postage-paid card inserted at page 57 for free information on advertised products

# SPARK PLUGS





# FOR BETTER ENGINE PERFORMANCE LOWER MAINTENANCE COSTS

**REPLACE** WITH THE PISTON  
RECOMMENDED BY MOST  
TRUCK & BUS ENGINEERS



Over 70% of all truck and bus manufacturers use Zollner Pistons as original equipment.

They know by experiment, research and testing that Zollner Pistons are designed and precision-made to give their motors top efficiency.

Naturally, Zollner Pistons are the first choice of fleet owners, too.

They know by experience that Zollner Pistons deliver the best in engine performance — at lowest maintenance cost.

The proof stands out on fleet records, everywhere.

## ZOLLNER

ORIGINAL EQUIPMENT IN AMERICA'S FINEST MOTORS

**ZOLLNER  
MACHINE WORKS  
FT. WAYNE • IND.**

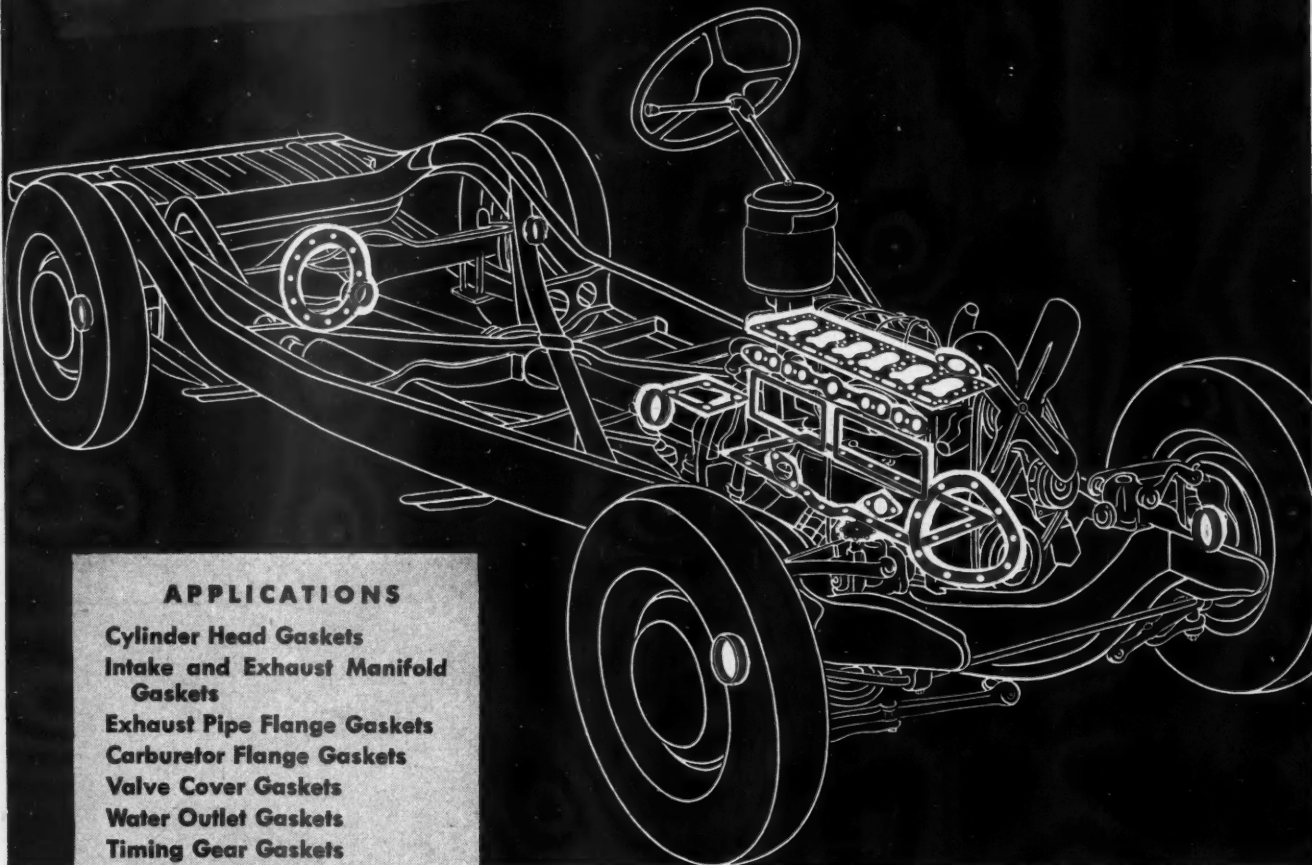
**PISTON EQUIPMENT**  
For Internal Combustion Engines  
Both Gasoline and Diesel





# FULLY SEALED

## WITH VICTOR PRODUCTS



### APPLICATIONS

Cylinder Head Gaskets  
Intake and Exhaust Manifold  
Gaskets  
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Valve Cover Gaskets  
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Oil Pan Gaskets  
Fuel Pump Gaskets and  
Diaphragms  
Transmission Gaskets and  
Oil Seals  
Pinion Shaft Oil Seals  
Axle Shaft Flange Gaskets  
and Oil Seals  
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Brake Lining Shim Stock

Victor Sealing Products cover the full range of modern automotive gasket and oil seal applications. Engineered to factory-approved specifications, they are available through nationally recognized automotive parts distributors.

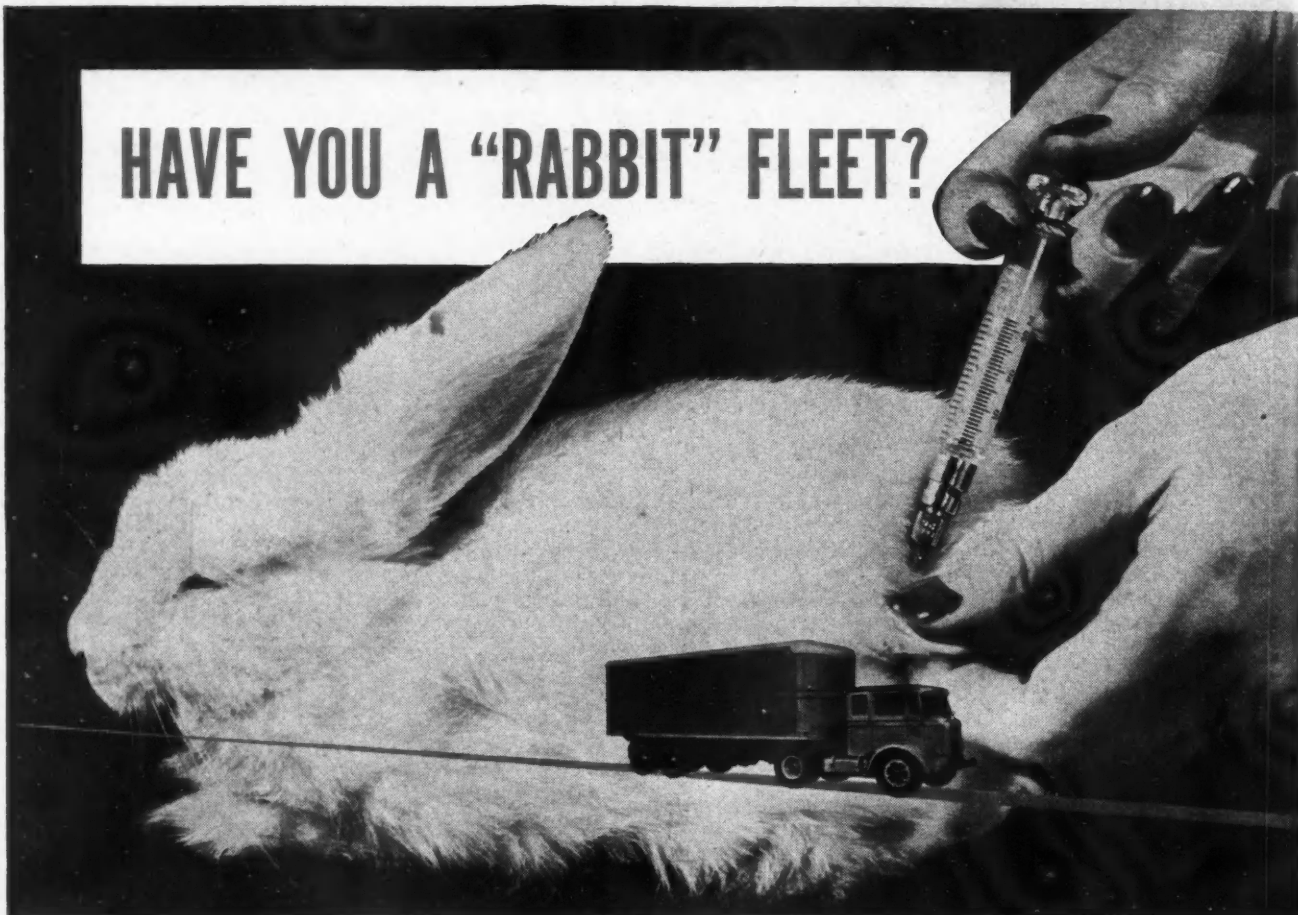
*Manufacturers of* SEALING PRODUCTS *Exclusively*



# VICTOR

## GASKETS • OIL SEALS

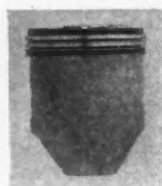
## HAVE YOU A "RABBIT" FLEET?



Don't make test rabbits out of your fleet. Particularly, don't bother to make a lot of tests of heavy duty oil. It can be very costly. Besides, Wolf's Head has had all these tests made for you time and time again . . . by world-famous testing laboratories.

Of all the heavy duty oils tested, the one consistently

### LABORATORY TEST PROVES WOLF'S HEAD IS BEST



◀ Chevrolet piston after 36-hour "stability" test. No varnish on piston skirt. No filling of oil ring. No deposit in ring grooves. No rings stuck. Rating: "Excellent." Oil used: Wolf's Head Heavy Duty Oil.



Chevrolet piston after 36-hour "stability" test. Heavy varnish on piston skirt. Oil ring quite filled. Excessive deposit in ring grooves. Rings sluggish. Rating: "Very Poor." Oil used: Competitive heavy duty oil.

proven superior . . . the one with the highest rating on all five heavy duty factors is . . . Wolf's Head.

We invite you to send for a free copy of the booklet describing these tests of heavy duty oils. Avail yourself of the free Wolf's Head Laboratory Control Service.\* Make us prove Wolf's Head can keep your units running longer, smoother, with less down time, with less cost for maintenance. Wolf's Head Oil Refining Co., Inc., Oil City, Pa., New York 10, N. Y.

*\*Laboratory Control Service gives fleet operators specific recommendations for their units, based on analysis of crankcase oil. Helps to establish correct drain periods, conserve engine life, reduce lay-ups—frequently reveals unsuspected engine troubles. Free and without obligation.*

# WOLF'S HEAD

## MOTOR OIL AND LUBES

100% Pure Pennsylvania



P.G.C.O.A. Permit No. 6





**Plymouth**

**DODGE**

**DeSoto**

**CHRYSLER**

**DODGE *Job-Rated* TRUCKS**

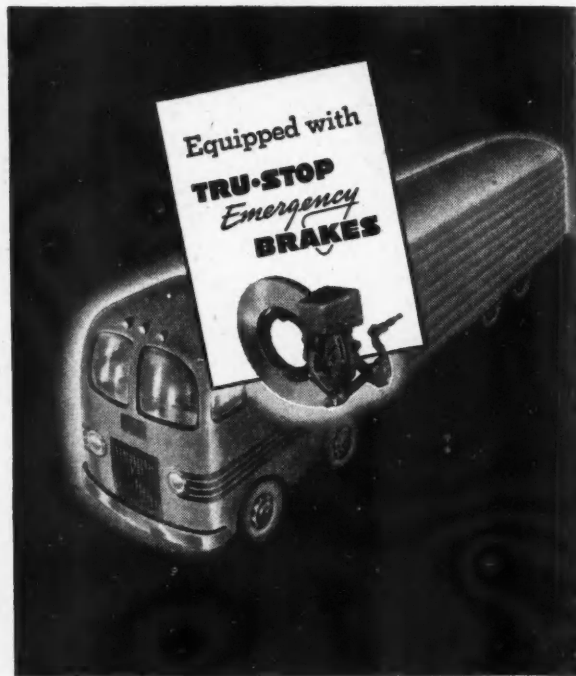
It's better than a New Year's resolution . . . more than a trademark.

It's a reminder of the earnings you'll make in 1947 by installing MoPar parts. You see, MoPar parts are factory-engineered and inspected to *fit right, last longer, perform better*. And that pays off in customer satisfaction.

So, recommend and install MoPar parts in Plymouth, Dodge, De Soto or Chrysler passenger cars and Dodge "Job-Rated" Trucks. You can get them from any dealer for these vehicles.

CHRYSLER CORPORATION — PARTS DIVISION — DETROIT 31, MICHIGAN





## BUSES AND TRUCKS SHOULD NOT HAVE PARKING BRAKES

**A modern bus or truck should have a real emergency brake—not just a parking brake. The hand brake should be able to decelerate, stop and hold the entire load—repeatedly. If it can't do that, it is just a parking brake and a possible hazard. To avoid such hazard, specify Tru-Stop Emergency Brakes for new equipment.**

DETROIT, MICHIGAN—Many actual road tests have proved that TRU-STOP Emergency Brakes can take punishment that will quickly destroy the conventional drum-type parking brake.

It's all a matter of heat dissipation. TRU-STOPS throw off the intense heat of braking. Drum-type brakes hold the heat in, so that it "cooks" both drum and lining.

The design of TRU-STOP Emergency Brakes is

such that adjusting is a simple, inexpensive job—one that can usually be done by the driver himself. Even relining is an easy operation done with standard tools. Low maintenance cost makes TRU-STOPS actually cost less on a per-mile or per-stop basis.

Specify TRU-STOP Emergency Brakes for new equipment. For detailed information, write our Detroit office. Just ask for DH-837.

**ACCO**

6-235 General Motors Bldg., Detroit 2 • 695 Bryant Street, San Francisco 7 • Bridgeport, Conn.



**AUTOMOTIVE AND AIRCRAFT DIVISION  
AMERICAN CHAIN & CABLE**

*In Business for Your Safety*

# Star Performance in slippery going



... another reason why Cooper Truck Tires  
make Payloads More Profitable

Trucks running hours behind on winter schedules? Costly delays eating into profits big bites at a time? Cooper has the tire to ease these winter weather worries. It's the All-Duty—a highway tire that gives star performance on any road, especially in mud, slush and snow.

Here's why: The business end of the All-Duty is a thick traction block tread that bites through to firmer footing—keeps trucks moving over stretches where highway tires of conventional rib design spin loads dead still. And the All-Duty's tread is built wider and flatter, too—gives long, even wear.

Inside is a strong, compact rayon cord body which is Distributed Stress Constructed—cushioned and armored with springy live rubber to protect against localized flexing and high friction heat. Meaning that the Cooper All-Duty runs cooler, retains its body strength longer, can be recapped for more money-saving miles of service.

It stands to reason that a tire built like the Cooper All-Duty gives star performance, whatever the road, load or speed. So to make payloads more profitable, your Cooper dealer is the man to see.



**COOPER TIRE & RUBBER COMPANY**

Factories at Findlay, Ohio

**IT'S easy TO ORDER**

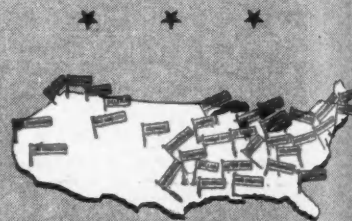
[illegible]

- ## Every WAA Regional Office Has This Buying Aid

You can tell at a glance what we have, how much of it, and the manufacturer's list price. All this information, checked and revised monthly, is maintained by the Automotive Parts Section in *each* WAA office, but is *centrally* compiled in Detroit.

**HOW TO ORDER**—Go or write to your nearest WAA Regional Office. • Ask for the Automotive Parts Section. • Examine the inventory. • Check this catalogue and make up your own list by manufacturer's part number. • Place your order on the spot for prepaid shipment. • *That's how simple it is!* (If you are unable to visit your Regional Office, inquire by mail or telephone whether parts you are interested in are available. Be sure to designate manufacturer's name and part number.)

30% or parts in *short supply* will be held to fill orders from Federal agencies. Orders from priority claimants will be filled in the following sequence: (1) Federal agencies; (2) Certified Veterans of World War II; (3) Subsequent priority claimants. A reserve of 10% of parts in *normal supply* will be held to fulfill the needs of priority claimants. Veterans of World War II should apply to their nearest WAA Regional Office for certification; the actual certificate must be attached to a Veteran's offer to purchase.



Exporters are considered as wholesalers in the purchase of surplus property. Any questions on export control should be referred to Office of International Trade, Department of Commerce, Washington, D. C.

**Offices located at: Atlanta • Birmingham  
Boston • Charlotte • Chicago • Cincinnati  
Cleveland • Dallas • Denver • Detroit • Fort  
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OWNED  
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704-5





# Quick Starts ... Long Life

**WILLARD BATTERIES** — Automobile  
Truck and Bus • Radio • Motorcycle  
Tractor • Aircraft • Marine • Diesel  
Stationary — Sold and serviced  
by Willard Dealers everywhere.

**Willard**

**"SAFETY-FILL"  
COMMERCIAL AND  
DIESEL BATTERIES**

**Dependability • Performance • Long Life**

**WILLARD STORAGE BATTERY CO. • CLEVELAND • LOS ANGELES • DALLAS • TORONTO**

# ZENITH

## CARBURETOR

30 YEARS SPECIALIZED  
EXPERIENCE IN HEAVY-DUTY  
CARBURETION



**Twice the Value**  
**for the cost of one!**

# ZENITH

## CARBURETOR

THE FINEST SERVICE  
ORGANIZATION IN THE  
BUSINESS



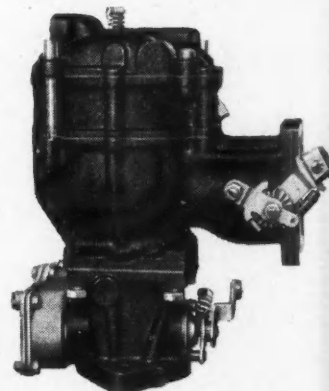
There are two essential factors in selecting a carburetor for heavy-duty operation. *First*—it must be designed and manufactured specifically for your purpose, not simply altered or redesigned from a type developed for ordinary operation. *Second*—materials, parts and expert service must be readily available to keep your carburetor at top efficiency.

When you select Zenith\* you get both. Zenith specializes in heavy-duty carburetors and enjoys the longest experience in this field of any manufacturer. The Zenith Service Organization, nowhere farther away than your telephone, is unsurpassed in its ability to make carburetor repairs and adjustments rapidly and economically.

\*TRADEMARK

**ZENITH CARBURETOR** Division of BENDIX AVIATION CORPORATION

696 Hart Avenue, Detroit 14, Michigan



★ ★ ★  
**ANOTHER SPICER**

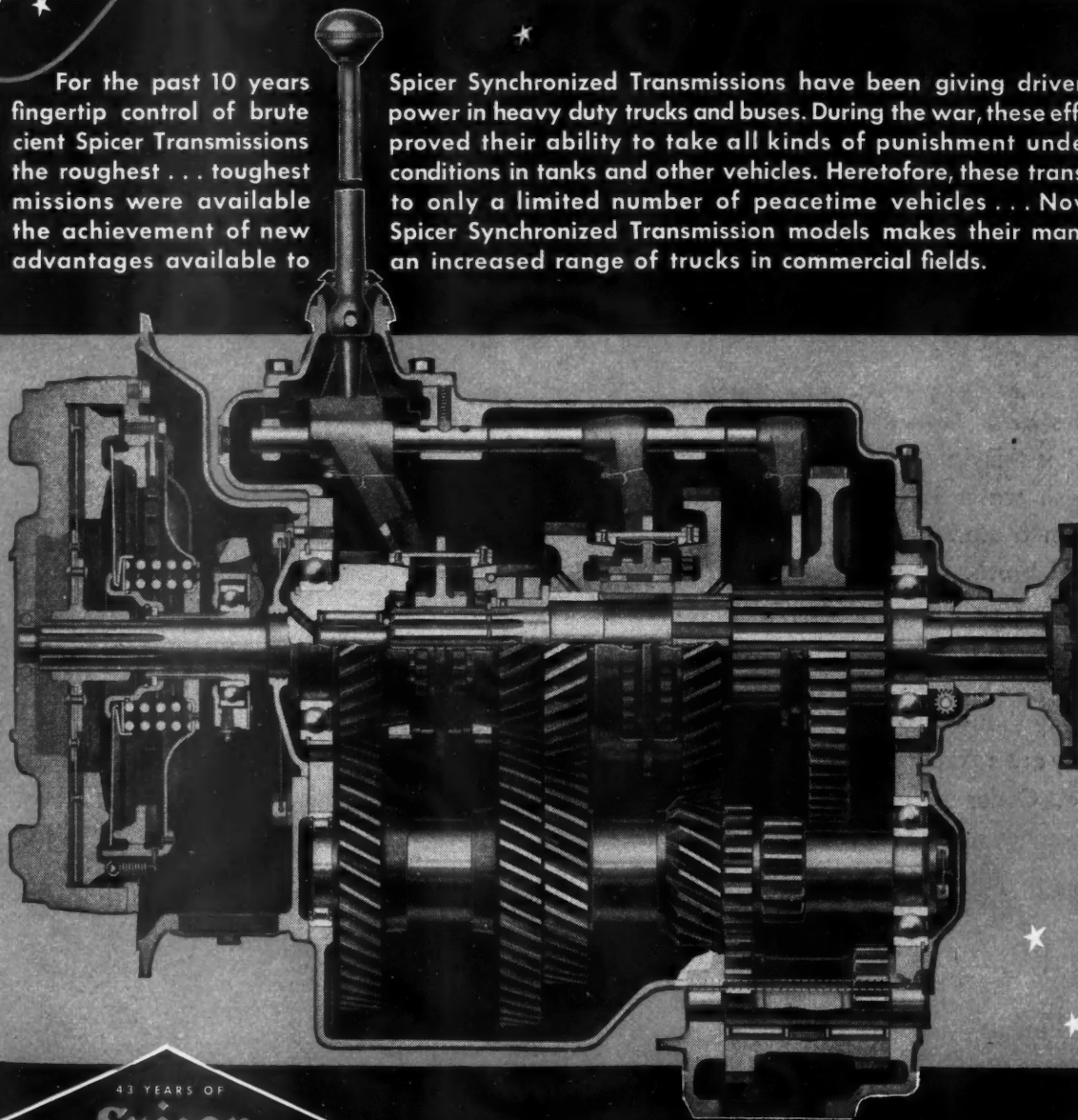
*Achievement*

★ ★  
**THE NEW Synchronized TRANSMISSIONS**

*For wider service in the Truck Field*

★ ★  
For the past 10 years fingertip control of brute  
cient Spicer Transmissions  
the roughest . . . toughest  
missions were available  
the achievement of new  
advantages available to

★  
Spicer Synchronized Transmissions have been giving drivers  
power in heavy duty trucks and buses. During the war, these effi-  
proved their ability to take all kinds of punishment under  
conditions in tanks and other vehicles. Heretofore, these trans-  
to only a limited number of peacetime vehicles . . . Now  
Spicer Synchronized Transmission models makes their many  
an increased range of trucks in commercial fields.



**SPICER MANUFACTURING**

Division of Dana Corporation  
TOLEDO 1, OHIO

TRANSMISSIONS, TORQUE CONVERTERS, CLUTCHES, PASSENGER CAR AXLES, UNIVERSAL JOINTS, PARISH FRAMES, STAMPINGS, SPICER "BROWN-LIPE" GEAR BOXES



# Take the Drudgery out of Truck Washing



This **SPEED WASH** fountain brush takes the drudgery out of truck washing. Clean, fresh water is continuously fed to the surface, from a standard size hose, through the handle and brush. Soaking, scrubbing and rinsing are done in one easy and fast operation. All told, the washing job takes about 10 minutes. Speed Wash fountain brushes have been proved on so many thousands of trucks, trailers and trains that they are sold on a money-back guarantee. Order yours today. Include check or money order for post-paid shipment.

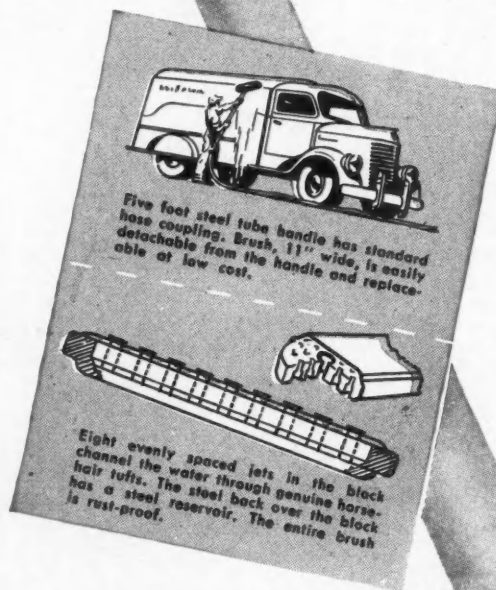
**\$11<sup>75</sup>**

**MILWAUKEE DUSTLESS**



**BRUSH COMPANY**

526 NORTH 22ND STREET, MILWAUKEE 3, WISCONSIN



MILWAUKEE DUSTLESS BRUSH CO.

526 N. 22nd St., Milwaukee 3, Wis.

Please ship.....Speed Wash brush(es). It is understood that we can return this equipment within 30 days for a full refund of our money if the Speed Wash doesn't prove entirely satisfactory.

Firm Name.....

Address.....

Please send us information on ☐ "Dustless" floor brushes ☐ "Speed Sweep" floor brushes ☐ Other floor maintenance aids.



## HERE'S UTMOST RELIABILITY IN SPEEDOMETER CABLES, TOO

No matter what makes of buses or trucks you operate, there are AC-engineered and AC-built Speedometer Cables for replacement service, either in complete cables ready for use, or in special kits with necessary parts and tools.

Twenty years of "know-how"—twenty years of experience in meeting the factory equipment requirements of automotive engineers—have given AC Speedometer Cables the *utmost reliability*. That's why more and more fleet owners insist upon AC Cables for all replacements.

Standardize on AC, the equipment that gives you *utmost reliability*.

### AC CABLES

#### assure THIS kind of QUALITY

- ★ Flexible cables made of highest grade steel wires on special, patented winding machines.
- ★ Flexible cables heat treated by patented methods to assure highest possible quality, which means:
  - Low whip                      Low torsional flexibility
  - Low internal friction      High torque strength
- ★ Built to meet the exacting requirements of car and truck makers.

**AC**  
**SPEEDOMETER**  
**CABLES**

AC SPARK PLUG DIVISION, GENERAL MOTORS CORPORATION

JANUARY, 1947

Use postage-paid card inserted at page 57 for free information on advertised products

175

# Same driver, same truck — but *twice* the load!



**M**ANY fleetowners have discovered that Trucktor offers the quickest, thriftiest way of cutting soaring operating expenses, by increasing the payload capacity of their present fleet. The use of Trucktor Third Axles converts their 4-wheelers into 6-wheelers—and practically doubles previous payload capacity.

A Trucktor Third Axle installation saves one complete truck and driver, pays for itself in lower fuel, maintenance and operating costs. The Trucktored 6-Wheeler will haul *twice* as much payload with *less* dead weight, *reduce* operating and loading time, and *lower* insurance rates. You can haul more cheaply with greater safety.

Simple, rugged Trucktor Third Axles protect truck bodies and frames, distribute loads equally with maximum flexibility. A rubber mounted Torque Arm absorbs braking strains and road shocks.

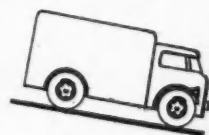
We shall be glad to send you detailed information on request.

**THE TRUCKTOR CORPORATION**  
156 WILSON AVENUE • NEWARK 5, N. J.

**TRUCKTOR  
THIRD  
AXLES**

**Save!**

**ONE  
TRUCK**



**ONE  
DRIVER**



**GASOLINE  
and OIL**



**Trucktor**

**THIRD AXLES**

MADE BY THE MAKERS OF TRUCKTOR TRAILER AXLES



# Greatest Truck Seat Ever Built

One glance at the new Bostrom Level Ride seat tells you it's the stand-out among truck seats for comfort, safety, and economy. See how the hydraulic shock absorber takes the jolts to prevent strain on the driver. See how the suspension mechanism really levels out the ride to reduce fatigue. See its rugged construction and sturdy materials to cut seat repair bills to the bone. See how compact it is — for easy installation. This seat is the result of over eight years of engineering by Bostrom — the firm that holds the nation's leading position in heavy duty transport seating. Its superiority has been proved on so many truck fleets that it is guaranteed to meet your requirements. Order today through your dealer or direct.

No. 10 Bostrom Level Ride Seat ... \$64.75 ea.

No. 10 Bostrom Level Ride in lots of  
six or more ..... \$59.50 ea.

No. 15 Bostrom Companion Seat (with-  
out hydraulic suspension) .... \$28.50 ea.

Prices F.O.B. Factory—plus Federal Excise Tax.

**BOSTROM MANUFACTURING CO.**  
MILWAUKEE 2, WISCONSIN



Tubular frame — welded  
steel. Oil tempered springs.



Springs adjust-  
able for varying  
weights of drivers.

5" fore and aft  
adjustment



Heavy duty shock  
absorber. Automo-  
bile type rubber  
bearings.

High quality cush-  
ion materials made  
to outlast ordinary  
cushions six to one.



**BOSTROM**

# Ride the **STORM!**



with **WEATHER-PROOF**  
and **LONG-WEARING** **TOLEX**  
upholstery...

Keep costs down with TOLEX upholstery for new equipment and replacement. Write for samples and more details. Textileather Corporation, Toledo, Ohio.

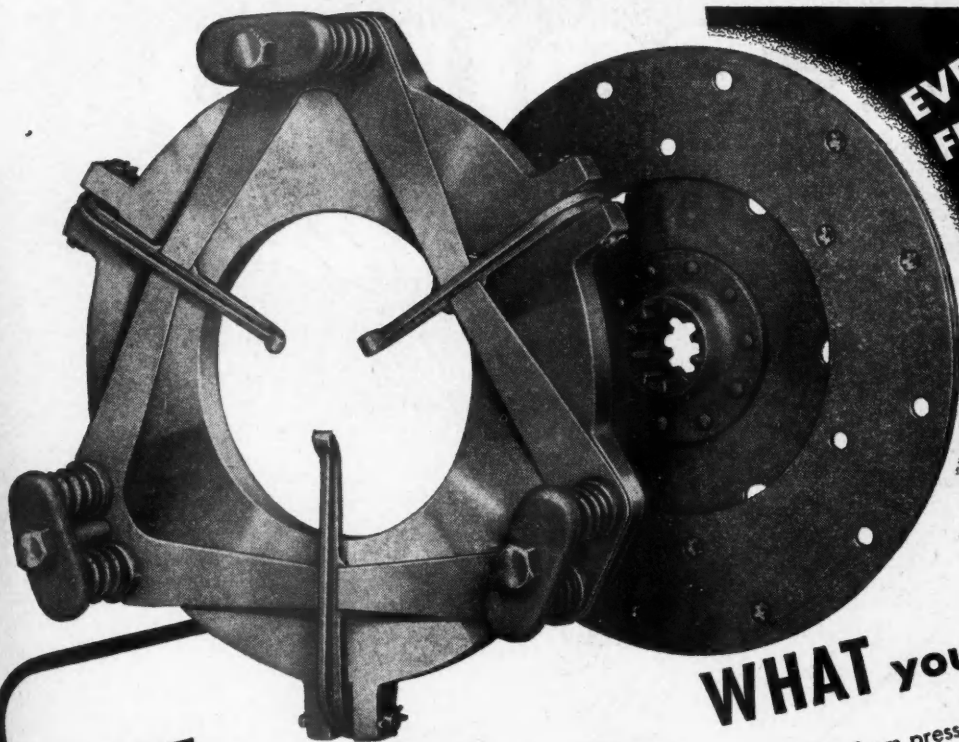
**EXTREMELY TOUGH . . . WATER-PROOF**  
**EASY TO CLEAN**  
**STAIN-PROOF . . . CAN BE FLAME-PROOFED**  
**DURABLE . . . ATTRACTIVE**  
**BROAD RANGE OF COLORS AND EFFECTS**



\*Reg. U.S. Pat. Off.



# 10 Important Features in the NEW LIPE Type L CLUTCH !



**EVERY  
FEATURE  
AN  
ACHIEVEMENT  
IN  
CLUTCH  
DESIGN !**

## **WHAT the LIPE CLUTCH has..**

1. Two machined pressure plate friction surfaces — thus a reversible pressure plate. . .
2. No cover to confine heat and dust. . .
3. No cover plate to take thrust of levers. . .
4. Low kinetic energy. . .
5. Simplified construction. . .
6. Simplicity of design. . .
7. Reduced number of wearing parts. . .
8. Greater lever ratio. . .
9. Machining on both sides of pressure plate. . .
10. Centrifugal force acting on levers increases plate pressure at high rpm. . .

## **WHAT you get...**

1. Double duty from pressure plate during normal life of clutch.
2. Maximum thermal efficiency, higher heat dissipation and less wear.
3. No deformation to affect the controlled parallel movement of pressure plate.
4. Faster acceleration and deceleration; instant, easier shifting.
5. No special tools or fixtures for assembly or disassembly.
6. Fewer parts and maximum interchangeability.
7. Lower maintenance and replacement costs.
8. Lighter pedal effort.
9. High resistance to plate warpage.
10. Greater effective capacity.

**USE THE LIPE TYPE "L" CLUTCH**  
IN AUTOMOBILES, FARM VEHICLES, TRUCKS,  
TRACTORS. Ask for Complete Specifications and  
Recommendations . . .

***Lipe*-ROLLWAY**

**CORPORATION**  
SYRACUSE 1, NEW YORK

Cable Address: LIPEGAR



# Announcing... **PRIOR** **OB-ROUND** *Safety Tanks*



PATENTS PENDING

**T**HE PRIOR OB-ROUND SAFETY TANK is the greatest improvement since the inception of safety tanks. See how these modern, compact tanks hug the frame, stay well inside the tires. Note the simpler-than-ever mounting brackets. *Capacity?* Ob-rounds are lighter in weight per gallon, to reduce your operation costs. *Safety?* They have all the famous safety features and strength of Prior cylindrical tanks. Underwriters' Laboratories approval, of course. *Every tank* has a visual gage as *standard equipment* as well as fuse plug and vented brass filler cap with

ball check. Two diameters—19" and 22"—6 lengths—27" to 33"—31 gallons to 54 gallons.

They're a snap to install: no angle irons or U-bolts to fuss with—no holes to drill in frame. Interchangeable on any truck frame width.

The above assembly includes the brand new Prior streamlined tool chest insulated to reduce noise. It fits snugly against frame and tanks and is a roomy, convenient tool compartment with a hydraulic jack well. The 4-way non-skid cover (standard equipment with Prior) can be locked and serves as a deck for the operator. Also available in pairs or single mounting.

WRITE, WIRE OR SEND THIS COUPON TODAY TO OUR NEAREST OFFICE

**PRIOR PRODUCTS, INC.**

BOX 349  
MIDDLETOWN, OHIO

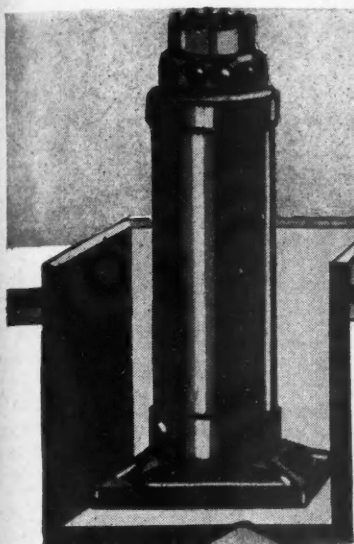
BOX 5686  
DALLAS, TEXAS

Please send me full information on Prior Ob-round Safety Tanks and the name of your nearest distributor.

NAME \_\_\_\_\_

STREET \_\_\_\_\_

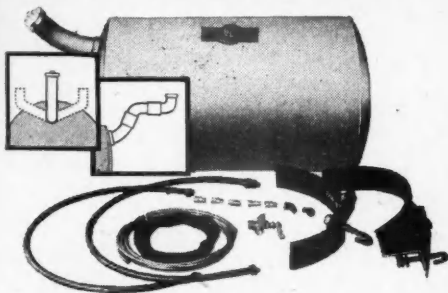
CITY \_\_\_\_\_ STATE \_\_\_\_\_



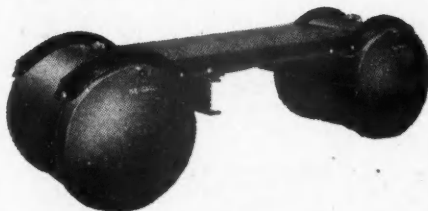
# You Save the Jack— WHEN

## Special Jack Well

The illustration above shows how a hydraulic jack is kept upright in the special jack well in the Prior Tool Chest. This well may be spotted in the chest to clear all parts of the chassis assembly. Well for 12-ton is standard equipment, 15-ton will be supplied on request at no extra cost. A special battery well is also available (at small extra cost).



The special end-fill safety tank, illustrated above, has an adjustable filler tube, which makes it possible to fit it to either side of any stake-body truck or bus. The filler tube also may be lengthened. This 18-inch tank comes complete with suspension brackets down to the last nut.



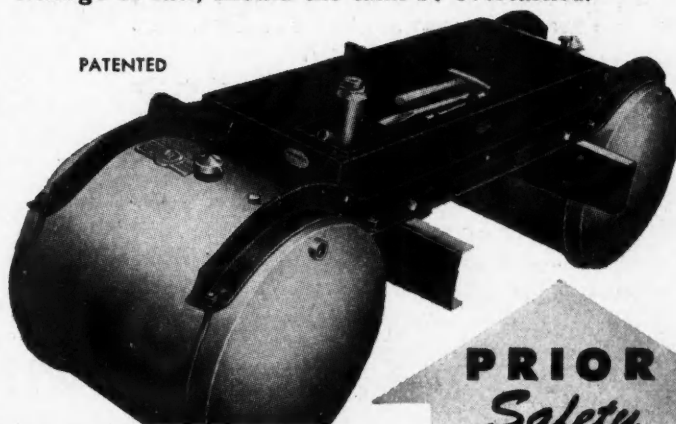
When Prior Safety Tank pairs are used (without the tool chest), a special catwalk, with a 4-way rough tread design is available for fitting between the cross-members of the suspension unit.

## YOUR TRUCKS ARE EQUIPPED WITH **PRIOR *Safety* TANK and Tool Chest Sets**

- The Prior Tool Chest provides a safe place to keep your hydraulic jack and emergency tools. It can be locked securely, and is quickly and easily accessible when you need to use either jack or tools. The chest is bolted to the heavy angle iron across pieces of the special curved angle iron tank suspension unit. The sturdy cover of the chest has a 4-way rough tread design that gives secure footing when used as a catwalk. and adds to the appearance of the set.

Prior Safety Tanks are built for heavy duty. They're pilfer proof; safety fused to guard against explosion in event of fire. A ball check in the vented filler cap prevents leakage of fuel, should the tank be overturned.

PATENTED



## ELECTRIC GAUGE

An electric fuel gauge, with dash mounted indicator, is available for either single tanks or tank sets. This is optional equipment at extra cost.

**PRIOR  
*Safety*  
TANKS**  
PROTECT CARGO  
EQUIPMENT  
AND POCKETBOOK

WRITE OR WIRE FOR NAME OF NEAREST DEALER

**PRIOR PRODUCTS, Inc • DALLAS, TEXAS • MIDDLETOWN, OHIO**

# SELL ➡➡

## ADDED SAFETY ON YOUR VEHICLES...

# Install Wagner Air Brakes

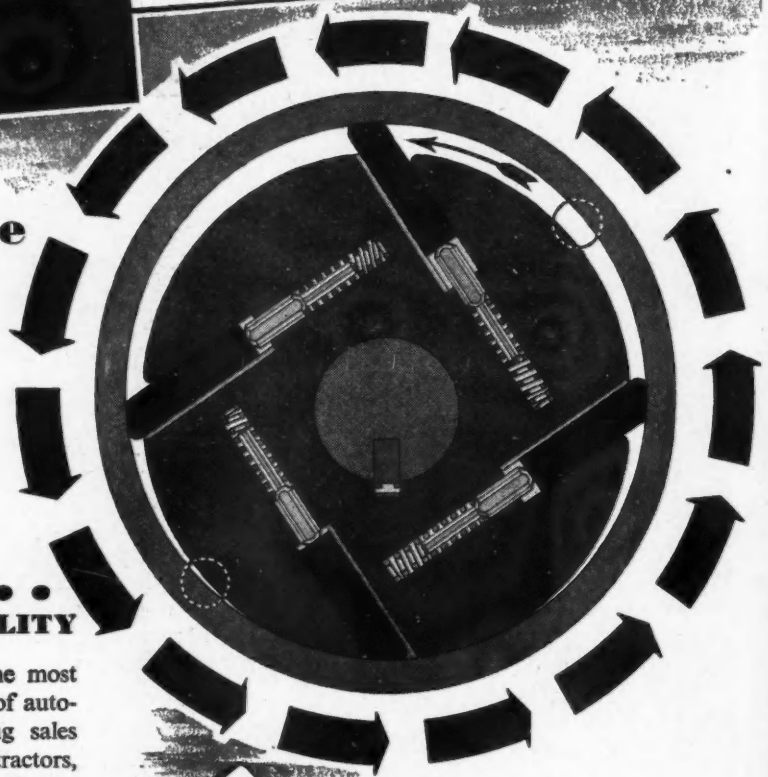
### the **ONLY** Air Brake with the Rotary Compressor...

### THEY ARE **FIRST...** IN ECONOMY AND RELIABILITY

**B**RAKE safety and reliability is one of the most important considerations in the designing of automotive vehicles and presents an outstanding sales advantage. Successful operators of trucks, tractors, trailers, and buses are quick to realize this. Today, loads are heavier...runs are longer...speeds are higher...and competition is keener.

When the vehicles you manufacture are given the added safety provided by Wagner Air Brake Systems, you give the users confidence "every inch of the way." From every angle, Wagner Air Brake Systems are your best bet—They are easy to install... Maintenance is very low... They are economical to operate... and they are the product of a company with twenty years of experience in the manufacture of automotive brakes.

For complete description, write for Bulletin KU-50B and address your request to Wagner Electric Corporation, 6470 Plymouth Avenue, St. Louis 14, Mo.



### ✓ Check These POINTS OF EXCELLENCE OF THE ROTARY COMPRESSOR

- Rotary motion of all moving parts.
- In running balance at all times.
- Longer belt life due to more uniform torque loading.
- Low friction losses—therefore high operating efficiency.
- A predetermined air pressure range automatically maintained.
- Operating parts are lightly stressed, thereby insuring long life and low maintenance cost.

- Extremely quiet in operation.
- Self-contained oiling system—uncontaminated by engine waste products.
- Compact—requires minimum installation space.
- Low operating temperature prevents carbon formation in the compressor and delivery lines.
- Adaptable to all types of automotive brake systems.



### Get Complete Information Today!

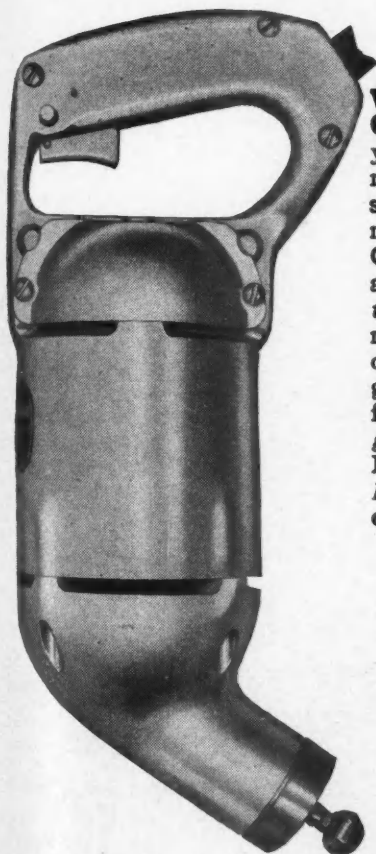
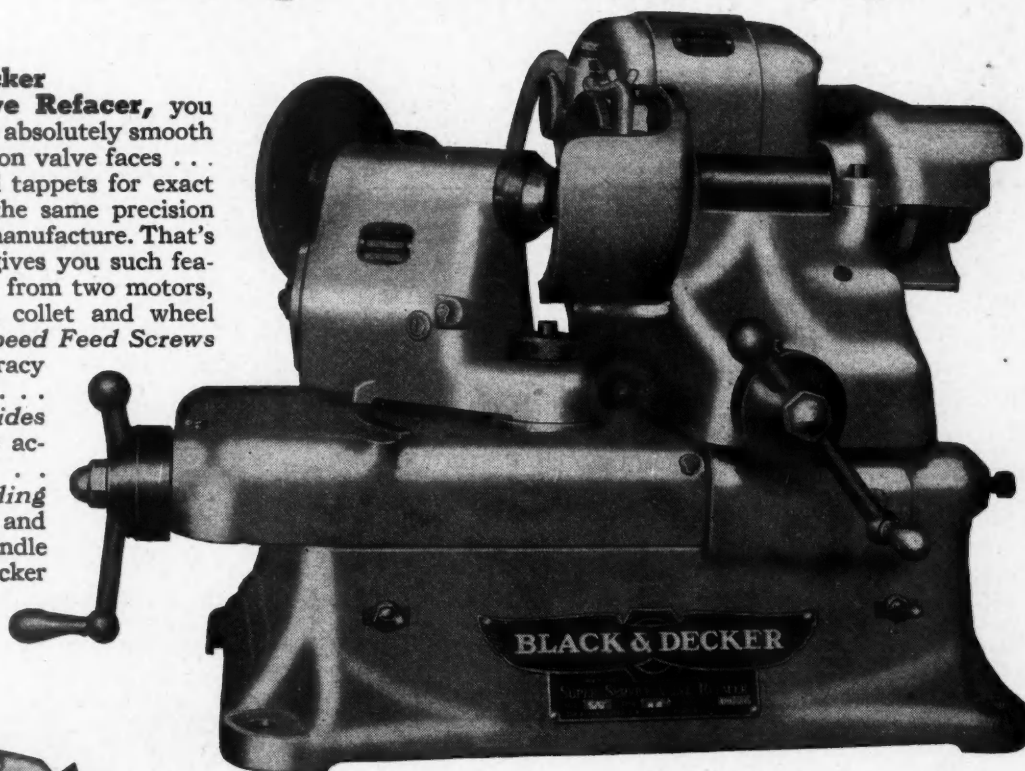
LOCKHEED HYDRAULIC BRAKE PARTS and FLUID • MoVal  
CoMoX BRAKE LINING • AIR BRAKES • TACHOGRAPHS  
ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES





# This Valve Reconditioning Equipment Brings Factory Precision Right into Your Shop!

With a **Black & Decker Super-Service Valve Refacer**, you can quickly produce an absolutely smooth surface and true angle on valve faces . . . grind valve stems and tappets for exact clearance . . . with the same precision used in their original manufacture. That's because this Refacer gives you such features as *Super-Power* from two motors, independently driving collet and wheel spindles . . . *Super-Speed Feed Screws* with screw-feed accuracy and lever-feed speed . . . *Super-Sensitive Slides* with smooth, accurate action of feed tables . . . *Super-Service Grinding Spindle*, ball-bearing and double-ended to handle both valve stem and rocker arm grinding.



With a **Black & Decker Vibro-Centric\* Valve Seat Grinder**, you can restore perfect accuracy and mirror finish on all types of valve seats. Vibro-Centric is the most accurate method you can use because: 1. Concentric Plunge Grinding is most accurate; 2. Gruv-Top\* Pilots find true center of valve guides; 3. Accurate Dressing Stand puts true angle on seating stone. Precision pilots and grinding stones and sleeves insure perfect results *with only a few seconds grinding per seat*. Together with the Refacer, it helps you turn out *perfectly matched, gas-tight* valve jobs . . . quickly and at lower cost!

\*Trade Mark Reg. U. S. Pat. Off.

**Send for Our Helpful, Illustrated Book**, "The Principles of Valve Reconditioning," for details on correcting valve troubles of every kind . . . in automobile, bus, truck, tractor and all types of internal combustion engines. Write today for your free copy to: The Black & Decker Mfg. Co., 632 Pennsylvania Ave., Towson 4, Md. For full details on Refacers, Valve Seat Grinders and other Portable Electric Tools, see your nearby Black & Decker Distributor.



LEADING DISTRIBUTORS



EVERYWHERE SELL

## Black & Decker

PORTABLE ELECTRIC TOOLS



*Announcing a NEW, improved*

## **AC GASOLINE STRAINER**

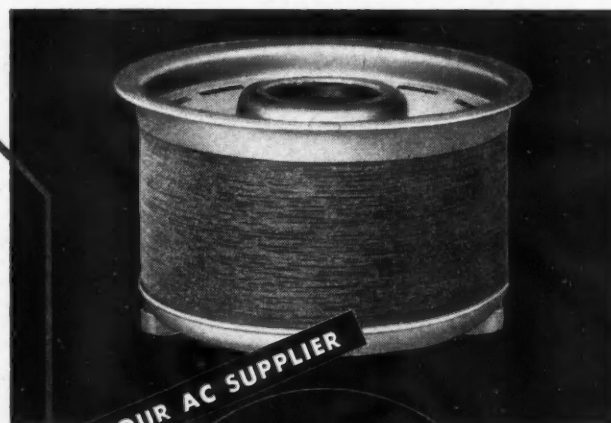
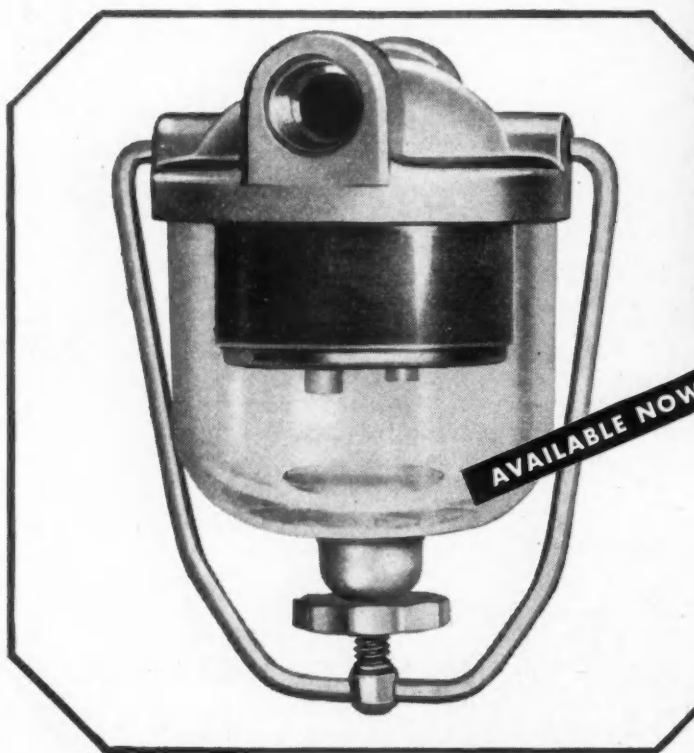
**with new, high efficiency Replacement Element  
of patented "Fiberite" Disc Type**

**N**OW, the AC Gasoline Strainer element used in U. S. combat and transport vehicles in World War II is available to you, for the first time. This high efficiency AC element is *100% non-abrasive*, water-proof, acid-proof, and rust-proof.

This remarkable element keeps lint, dust, dirt, abrasives, and water out of the carburetor. It affords full protection for jets, needle valves, and valve seats, and promotes full carburetor efficiency and fuel flow.

Gasoline enters the "Fiberite" element from *inside and outside*, doubling the straining area. Element replacement takes only a few seconds . . . installation is very simple.

Avoid delays on the road, and damage to carburetor parts and adjustment, by installing this low cost, highly efficient AC Gasoline Strainer. It's completely safe, and completely reliable.



**AVAILABLE NOW FROM YOUR AC SUPPLIER**

# **AC**

## **GASOLINE STRAINERS**

AC SPARK PLUG DIVISION • GENERAL MOTORS CORPORATION

# SLUDGE

## STOPS HERE

*Longer  
Engine Life  
Starts Here*

### Fram Cuts Breakdowns Saves Motors, Delays, Money

Here's the picture of what Fram filters and cartridges do on the engines of your fleet. Fram oil filters remove dirt, dust, grit, sludge and abrasives from motor oil . . . thereby check trouble before it starts. And that means longer engine life, lower operating costs, higher profits for you!

#### **FRAM is GUARANTEED to Save You Money**

So confident are we that Fram will save you money, headaches and time that we make this unqualified guarantee: Put Frams on your fleet . . . operate for 90 days. If you are not satisfied that Fram oil filters save you many times their original cost . . . you to be the sole judge . . . we'll gladly refund your money!

There are no strings to this offer. You've nothing to lose . . . and much to gain. Why not give it a try? Call your Fram distributor now . . . start the Fram 90-day road test today! Fram Corporation, Providence 16, R. I.  
In Canada: J. C. Adams Co., Ltd., Toronto, Ontario.



# FRAM

**OIL & MOTOR**  
*Cleans the Oil that Cleans*

**CLEANER**  
*the Motor*





Otto D. Whipple, who has had nine years' experience driving trucks in the Midwest, says of the E-Z RIDE SEAT recently installed on his truck: "The seat eliminates back support belts . . . does away with back scrubbing and constant bumping. I feel 100% better at the end of the day. Railroad crossings and severe bumps no longer knock me off the seat. I prefer 14 hours on a Monroe seat to eight on the standard variety."

**HERE'S  
YOUR  
ANSWER**

## MONROE E-Z RIDE TRUCK SEAT

Here's the answer to your problem of increasing your trucks' running time and operating efficiency beyond the present limits set by the endurance of your drivers. It's the new Monroe E-Z RIDE TRUCK SEAT, built for the special purpose of decreasing driver fatigue . . . *designed to carry the driver and no other load!*

The Monroe seat combines soft spring comfort with the ride cushioning of the Monroe Direct-Double-Action *Hydraulic Shock Absorber* and the side-sway control of a lateral stabilizer. It adds hours and miles to the run and brings smiles of relief to the faces of drivers who until now have had to take the jars and jolts of truck springs, strong enough to carry the load, but too heavy for human comfort.

Now available for 1938-46 Dodge Truck. Models for International, GMC, Ford and Chevrolet on the way. Monroe engineers always ready to assist you in rehabilitating your equipment for more comfort, greater safety, full utility. *Write or wire.*



### MONROE E-Z RIDE TRUCK SEAT

1. Special Monroe Direct-Double-Action *Hydraulic Shock Absorber* controls jars and jolts.
2. Exclusive variable-rate coil spring acting in unit with Monroe *Hydraulic Shock Absorber* assures easy-chair comfort for driver of any weight. No adjustment required.
3. Pivot point and stabilizer bar take care of side sway—just as important to health and endurance as cushioning the up-and-down jolts.

Originated and manufactured exclusively by  
**MONROE AUTO EQUIPMENT CO., MONROE, MICH.**

A LOAD BEHIND IS A TRIP AHEAD



KINGHAM TRAILERS MEAN...

# **I**ndependence

No firm operating Kingham Universal Trailers worries over their ability to stay on the road day and night . . . regardless of weather conditions . . . for almost countless years. Operating costs are negligible, and repairs are kept to a minimum. INDEPENDENCE is the keynote of these trailers.

The design of Kingham Universal Trailers has not only been proved on every highway in America and many foreign countries . . . but, also . . . upon deep muddy roads . . . rocky roads . . . across plains, deserts and valleys that had no roads, and these trailers have conquered every road condition known.

Executives of firms using trailers who have visited our plant are unanimous that they will wait until Kingham Universal Trailers are available.

# **Kingham** **UNIVERSAL**

NATIONAL SALES . . . NATIONAL SERVICE

KINGHAM TRAILER COMPANY • INCORPORATED • LOUISVILLE, KENTUCKY

# NATIONAL SERVICE

## 20 GENERAL Branches and Warehouses

Through its branch offices and distributors in every section of the country, **GENERAL** serves all American industry. One of these outlets is nearby to provide you with prompt delivery and experienced fire protection counsel. Shown below are the three **GENERAL** plants in Detroit. Call on your **GENERAL** representative for dependable fire protection.

## To Serve You...



### THE GENERAL DETROIT CORP.

Manufacturers of Fire Extinguishers

Motor Fire Apparatus and Allied Equipment

2270 E. JEFFERSON • DETROIT 7, MICHIGAN  
NEW YORK • PHILADELPHIA • ATLANTA • CHICAGO • DALLAS

West Coast Affiliate: The General Pacific Corp.

Los Angeles San Francisco Seattle

Distributors in Principal Cities

IF IT'S

**GENERAL**

IT'S DEPENDABLE



*S-O-S  
Fire Guard*

S. O. S. FIRE GUARD Vaporizing Liquid Extinguisher—America's great utility fire fighter. Effective on oil, electrical, grease, and gasoline fires. Will not freeze at 48° below zero. 1 qt. and 1½ qt. sizes.



*CD  
SNO FOG*

CD-SNO FOG Carbon Dioxide Extinguisher. Kills fire instantly, yet cannot damage equipment, premises, or personnel. Effective on electrical, oil, and gasoline fires. Sizes 2 to 100 lbs.



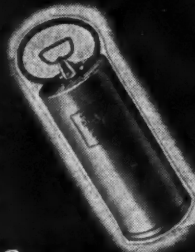
*Red Star*

RED STAR Soda Acid Extinguisher. Releases strong stream of water under chemical pressure. Immediately effective on wood, paper, or textile fires.



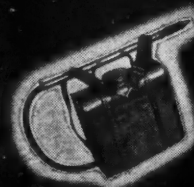
*Floafome*

FLOAFOME Foam Type Extinguisher. Smothers fire under a blanket of foam. 2½ gallon size produces 22 gallons of foam. For use on wood, paper, textile, oil, and gasoline fires.



*Protector*

ALASKAN and PRO-TECTOR Pump Type Extinguishers. For wood, paper, or textile fires. Range is 45 feet. Non-freeze charge protects at 48° below zero. ALASKAN—2½ gallons; PRO-TECTOR—5 gallons.



*Pacemaker*

PACEMAKER Knapsack Type Extinguisher. Can be strapped on back and operated from that position. Telescopic pump nozzle leaves both hands free for fighting fire. Ideal for outdoor fires.



# Faithful guardian!



In its lifetime, a good truck belt guards against many serious fleet breakdowns. More and more fleet operators are finding the new Dayton Heavy-Duty Fan Belt a faithful guardian of engine efficiency, and are relying upon Daytons as a dependable performer in delivering the goods. Check these new Daytons on your fleet . . . you'll discover a new saving in maintenance, a new length of service!

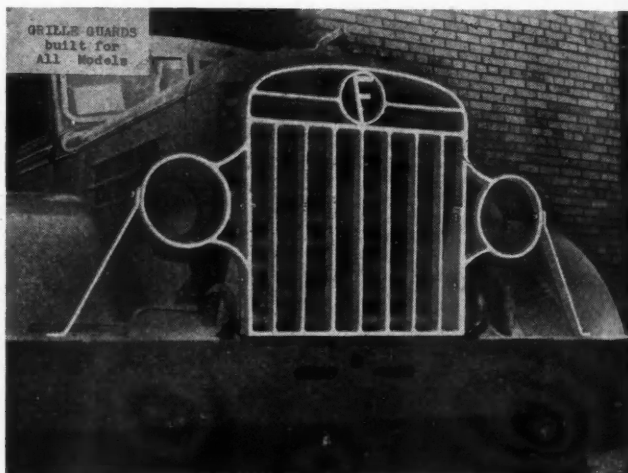
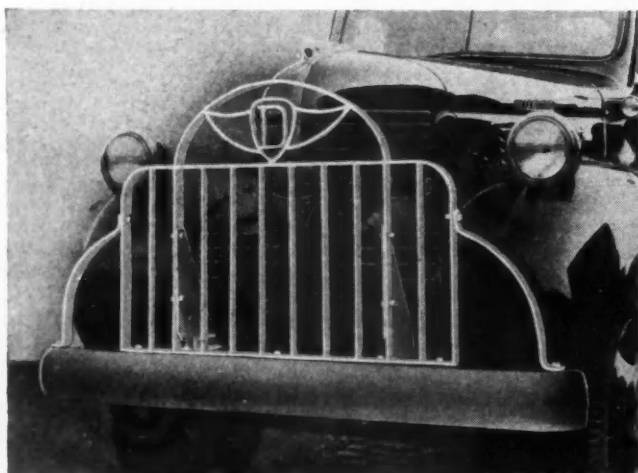
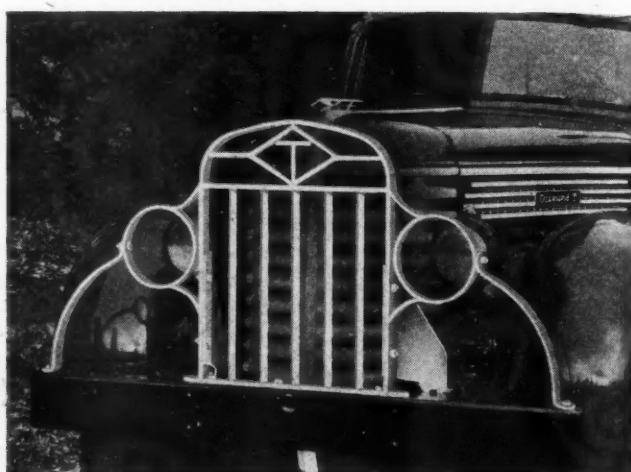
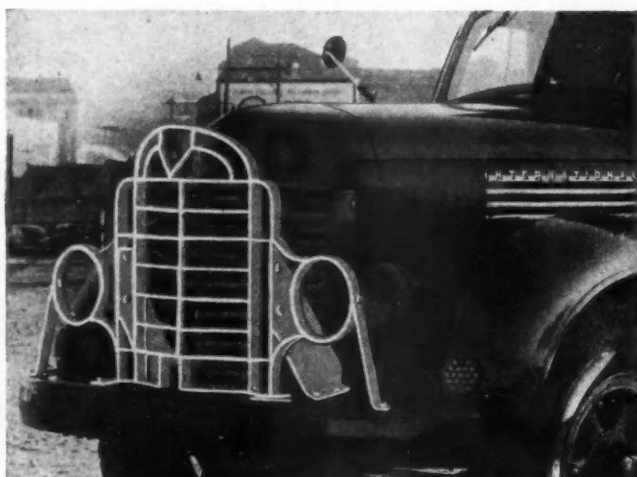
TRY A DAYTON BELT ON YOUR SPEEDOMETER

TRUCK BELTS BY  
**Dayton Rubber**

THE MARK OF TECHNICAL EXCELLENCE IN NATURAL AND SYNTHETIC RUBBER



# Attention TRUCK DEALERS



## \*GRILLE GUARDS *for*

Dodge, Diamond T, International, Studebaker, White, Ward LaFrance and Federal trucks—Attractively designed — sturdily built — easy and fast installation — special patented flat mounting plates on most designs.

*Immediate Delivery*

\*Patent Pending.

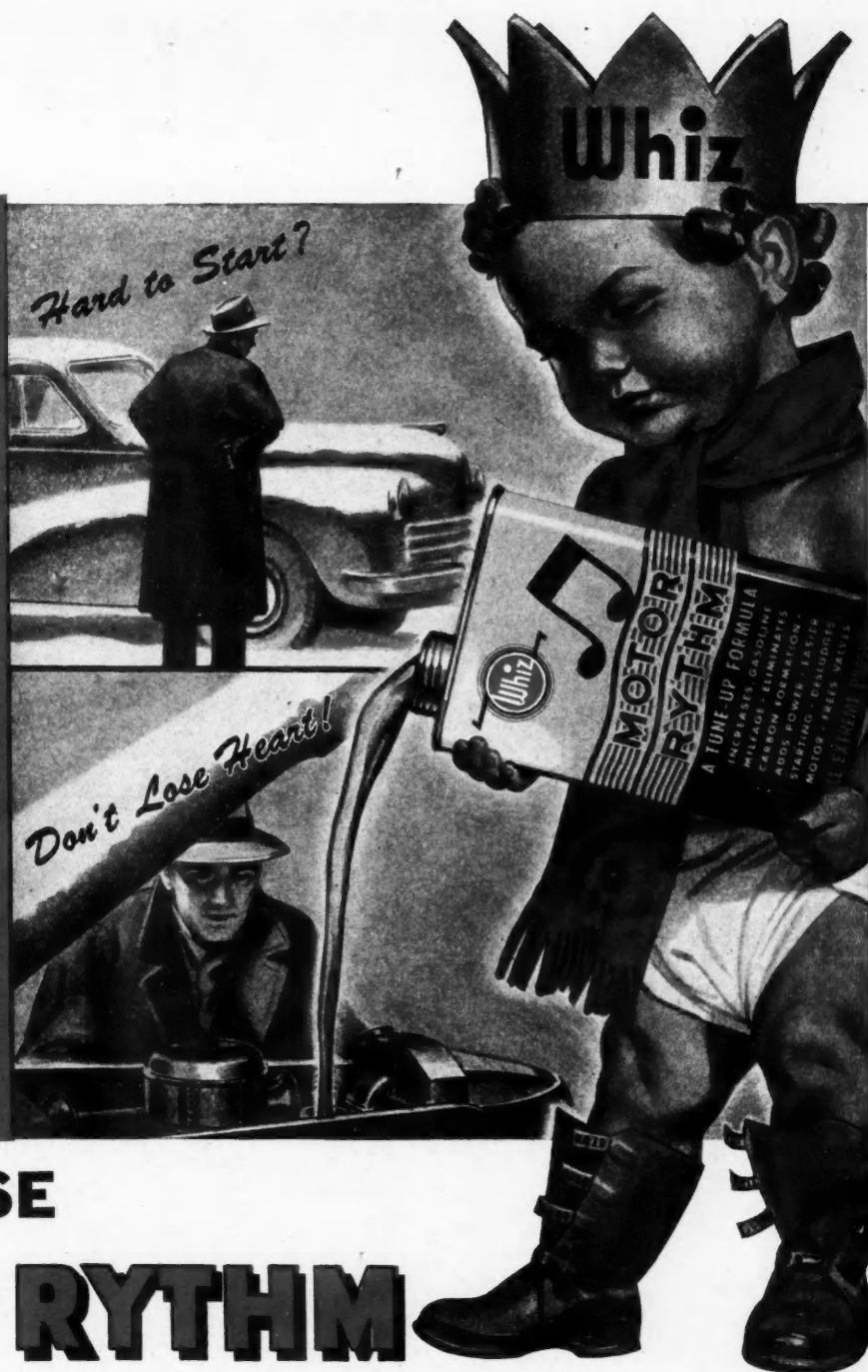
**BUSTIN IRON WORKS, INC.**

DESIGNERS AND MANUFACTURERS OF METAL PRODUCTS SINCE 1928

110 EAST 130th STREET, NEW YORK 35, N. Y.

Telephone: ATwater 9-2200

FOR  
*Faster Starts*  
 IN  
 COLD WEATHER



USE  
**MOTOR RYTHM**

Pour a pint of MOTOR RYTHM into the crankcase of every car, truck, or bus in your fleet *right now*—then add a pint with every oil change—and be sure of fast, easy starting all winter long! A touch on the starter will bring the coldest motor to life. You'll save wear and tear on batteries and engines; save gasoline. Place your order for MOTOR RYTHM now.

R. M. Hollingshead Corporation, Camden, New Jersey; Toronto, Canada. Warehouses: Dallas, San Francisco, Chicago.

- Make MOTOR RYTHM an important part of your year 'round maintenance program.
- It's the modern, chemical, safe tune-up!
- It keeps engines clean inside!
- It assures fast starts in cold weather!
- It protects new or rebuilt engines during the critical break-in period.



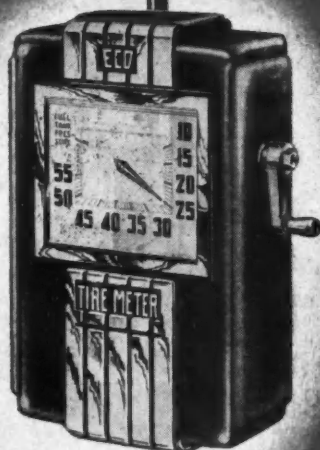
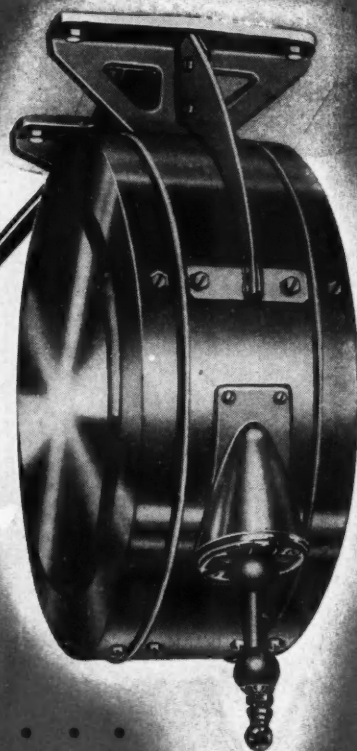
A PRODUCT OF  
*Hollingshead*  
 LEADER IN MAINTENANCE CHEMICALS





# Tiremeters

## PAY THEIR WAY...



There is something about Eco Tire Inflation that makes regular customers out of "once-in-a-while" customers. The speed with which tires are inflated, the "on-the-nose" accuracy, and the business like nature of Eco service performance builds customer confidence. On the other hand customers can feel the dependability of Eco. They know that the precision mechanism is "locked-in a safe" and anchored down to prevent abuse and to avoid being kicked around at the end of a hose.

Eco creates customer satisfaction and builds the confidence that brings customers back. Because of this, Eco Tiremeters pay their way.

*Model 34 illustrated above — Model 32, Hose Reel; Model 37, Wall type; Model 38, Pedestal type; and Model 33, Pedestal type with automatic hose return, are also included in the Eco line.*



MANUFACTURERS OF A COMPLETE LINE OF DISPENSING EQUIPMENT

ATLANTA  
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TERRITORY DIVISION HEADQUARTERS  
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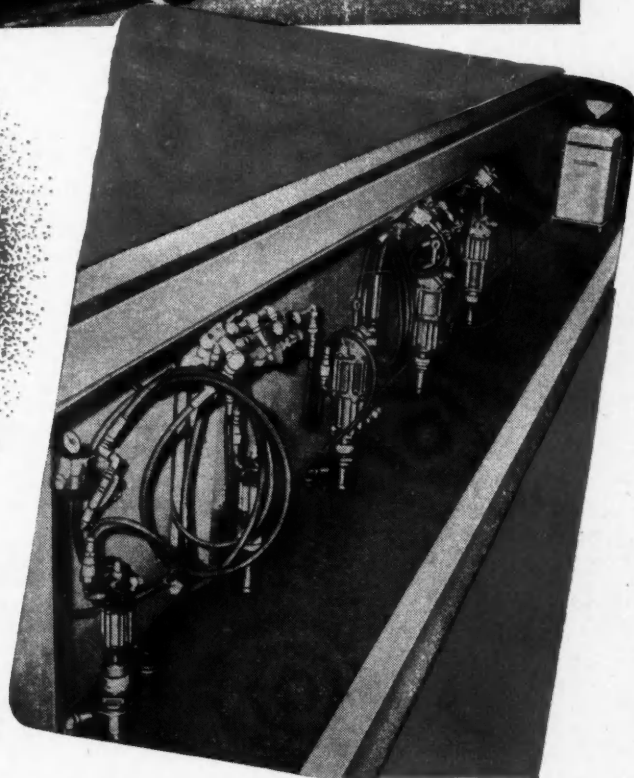
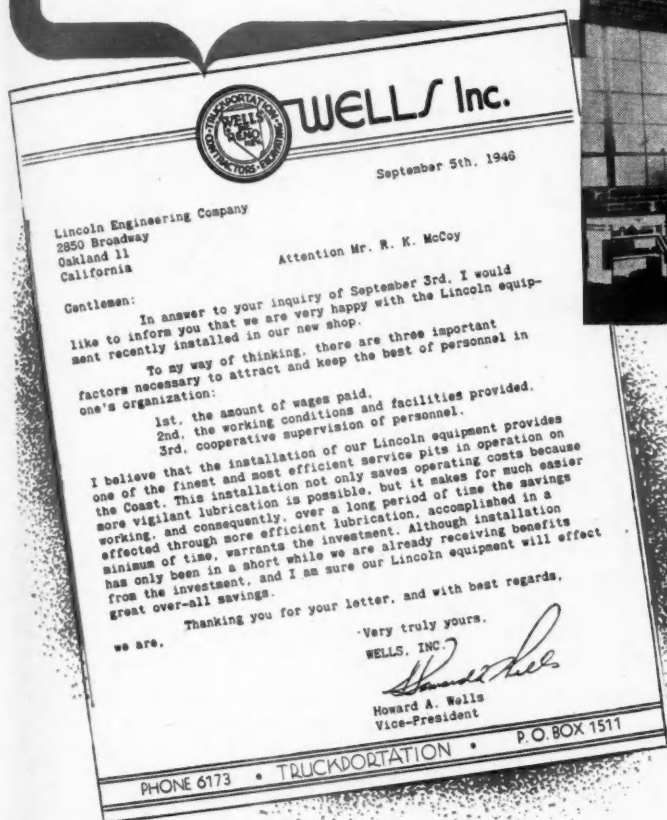
DALLAS  
SAN FRANCISCO

DETROIT  
ST. PAUL

FOREIGN DIVISION: 29 BROADWAY, NEW YORK, NEW YORK  
SERVICE STATION EQUIPMENT COMPANY LIMITED  
TORONTO—MONTREAL—WINNIPEG—VANCOUVER

SERVICE STATION EQUIPMENT COMPANY, MUSKEGON, MICHIGAN

# HERE'S WHAT Wells, Incorporated says about their **LINCOLN** HEAVY-DUTY LUBRICATING EQUIPMENT



**W**ELLS, Incorporated, one of the largest fleet operators on the West coast, has found that their Lincoln Heavy-Duty Lubricating Equipment provides the capacity, flexibility and operating efficiency essential to top performance in fleet maintenance. Operating some of the largest vehicles over some of the toughest and roughest roads in America, they know that good lubricants applied with dependable Lincoln Lubricating Equipment give them the best possible bearing protection.

Fleet operators, large and small, throughout the country have built their preventive maintenance program around Lincoln Lubricating Equipment. From single units to complete installations—you can depend upon this outstanding lubricating equipment to give added service life to your rolling stock. Lincoln representatives, located in all principal cities, will be glad to assist you in planning the lubrication department best suited to your needs. The coupon below will bring you complete information.

## LINCOLN

Pioneer Builders of Engineered Lubricating Equipment

AT TOP: The drive-in and drive-out approach adds speed to the Wells, Incorporated lubrication service. The Lincoln Portable Servmobile, left, provides carriage for essential service tools and equipment.

ABOVE: The Lincoln pumps, installed in the pit, dispense lubricants from 500 gallon underground storage tanks. The Lincoln Drainmobile, right, is portable and can be easily moved under drain.

**LINCOLN ENGINEERING COMPANY**  
5701 Natural Bridge Ave., St. Louis 20, Mo.

Gentlemen:

I would like to have literature on Lincoln Lubricating Equipment ☐ I am interested in a complete lubrication system ☐.

Name \_\_\_\_\_  
Firm \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

CCJ A47-1

**BUY WITH CONFIDENCE**  
*from the jobber*  
*who carries*  
**PACKARD CABLE**

Packard cable on your jobber's shelf is a good tip-off that he stocks quality products *all along the line.*

Figure it this way. He buys Packard cable on *merit alone*, since Packard makes nothing but cable in the automotive field—offers no "tie-in sales" or "package deals" which require him to accept merchandise he doesn't want, in order to get a line he does want. It's there because he's convinced it's the best product of its kind. And if he buys cable that way, you can bet that he applies the same good judgment to the other products he carries.

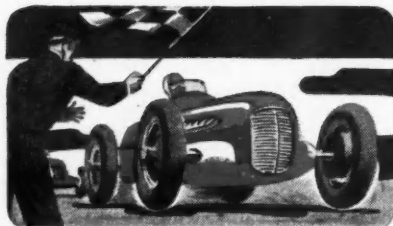
Buy with confidence from the jobber who handles Packard cable.

## HERE'S WHY YOUR JOBBER CARRIES PACKARD CABLE



### He Believes in Quality

... knows that Packard research and manufacturing are concentrated on one line—automotive cable. That's what Packard's been making for more than 40 years.



### He Believes in Leadership

... has watched Packard lead the field in the use of plastics, lacquers, synthetics and other developments to make cable last longer, perform better.



### He Believes in Sales

... knows that Packard cable has better acceptance, because it is used as original equipment in more new cars than all other makes of cables combined.

YOU'RE RIGHT WITH

**Packard**  
REG. U.S. PAT. OFF.  
 TRADE MARK

PACKARD ELECTRIC DIVISION  
 GENERAL MOTORS CORPORATION  
 WARREN, OHIO



**FOREMOST BUILDER OF AUTOMOTIVE AND AVIATION WIRING**





## BRAKES CAN'T FREEZE

### IF THEY'RE ALL HYDRAULIC



# HYCON

## Compound CYLINDER

**Eliminates brake lag . . . improves safety factor . . . simple and quick to install . . . cuts tire wear and fuel consumption . . . reduces maintenance.**

There's nothing to freeze in a HYCON Brake, because it's *all-hydraulic*—no vacuum or air in its operation. Moisture in air tends to condense in "booster" cylinders. When the temperature drops, it freezes. The hydraulic fluid used in *HYCON Brakes will flow freely at sub-zero temperatures.* HYCON hydraulic power is continuous and needs no "boost" from vacuum or air or any other means. The secret is a *second piston* contained in the compound cylinder itself.

### **Positive braking control reduces skidding and tire-scuffing**

When trucks skid on icy roads, blame the brakes. When wheels lock and slide the tires, blame the brakes. Without *positive control*, brakes grip harder than the driver intends. HYCON Brakes deliver braking pressures in correct proportion to pedal pressures, because they are 100% hydraulic.

### **Install and Compare**

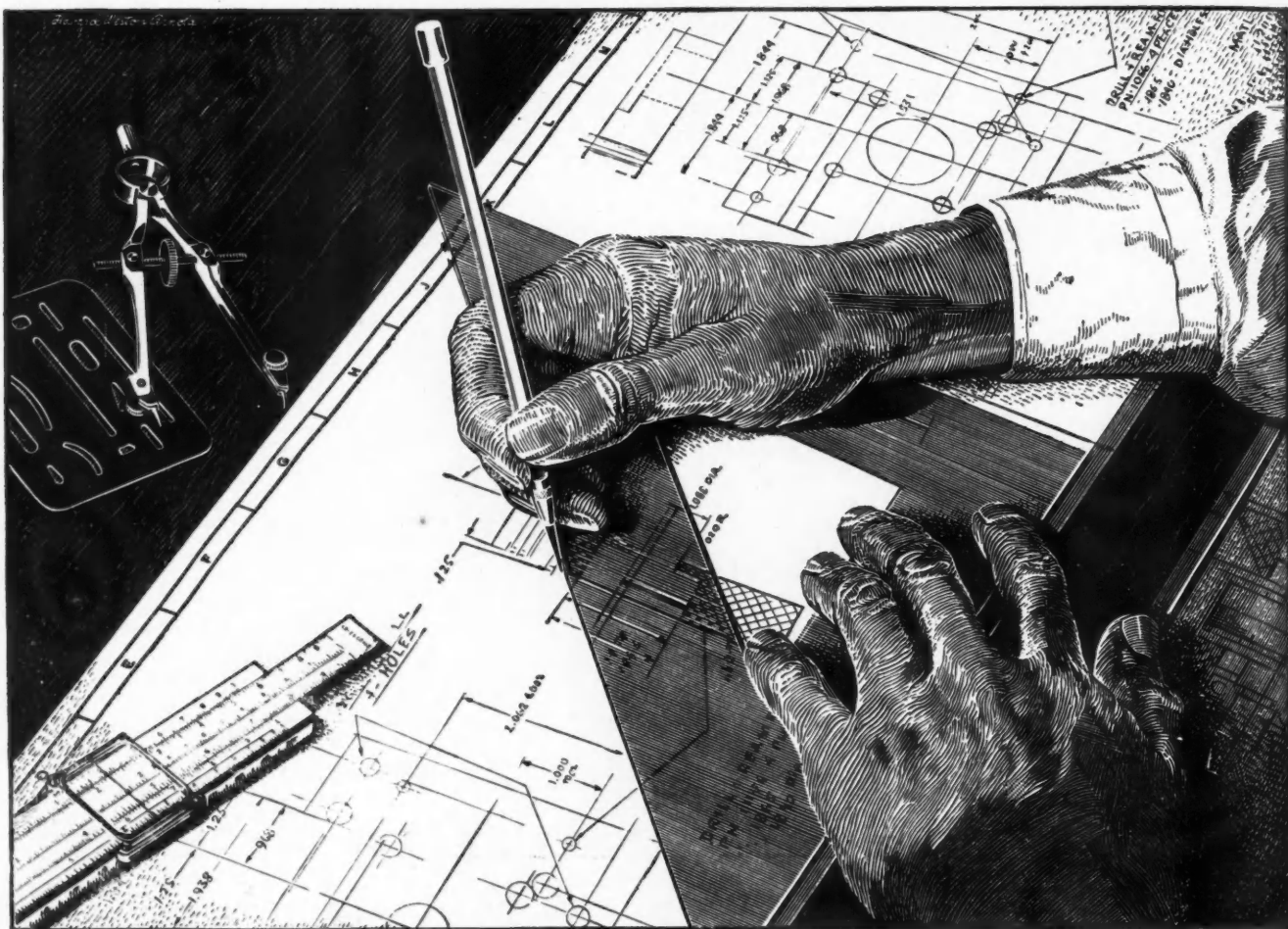
For savings in gasoline consumption, tire mileage, cost of installation and maintenance, *send for a Demonstrator Unit.* Now available to replace 1¼" and 1½" Di. original equipment master cylinder. Order from your local power brake distributor, or write direct to The New York Air Brake Company, 420 Lexington Ave., New York 17, N. Y.

Look for this Registered Trade Mark

## THE NEW YORK AIR BRAKE COMPANY

420 Lexington Avenue, New York 17, New York





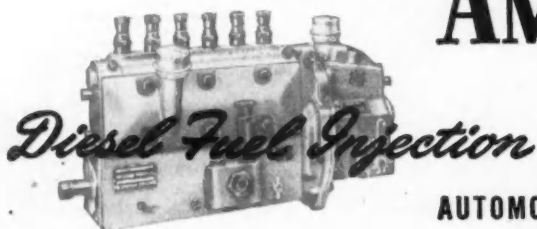
# EXPERIENCE ..at your Service

At American Bosch, engineering experience born of years of doing is at the service of Diesel users everywhere. Pooled with the Diesel Builders' own knowledge, this specialized fuel injection experience is at work today on the better, lighter, more efficient Diesels of the future.

Production skill and capacity which have kept pace with the industry's growth bring the engineers' work to reality. Widespread field service keeps the equipment operating efficiently.

Thus American Bosch experience serves from the conception of the engine to the product at work, which may serve to explain why a majority of America's Diesel Builders equip their engines with American Bosch Fuel Injection. **AMERICAN BOSCH CORPORATION, Springfield 7, Mass.**

# AMERICAN BOSCH



## AUTOMOTIVE AND AVIATION ELECTRICAL PRODUCTS

# Recondition Valves Faster, Better with the **NEW** **KNOCK-OUT** VALVE REFACER!



Now you can reface valves, butt grind valves AND regrind rocker arms on ONE machine. An easier, faster way to do a better, more

complete valve reconditioning job.

The NEW "Knock-Out" Valve Refacer is compact, solid, easy to set up and fast to operate. Built-in accuracy and rigidity makes it easy to get a mirror finish on valve faces, hold close accuracy on butt grinding and regrind rocker arms to proper contour with a minimum effort.

## MAKE EASIER, BIGGER PROFITS WITH BETTER TOOLS...

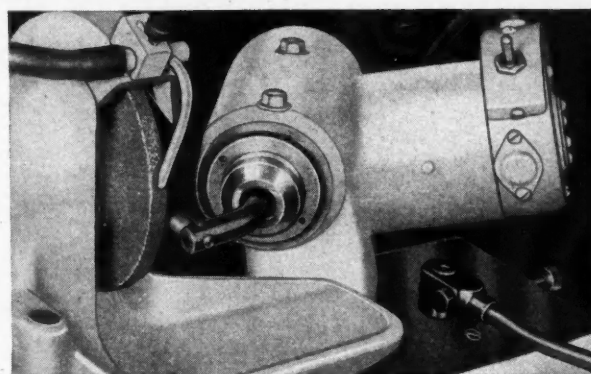
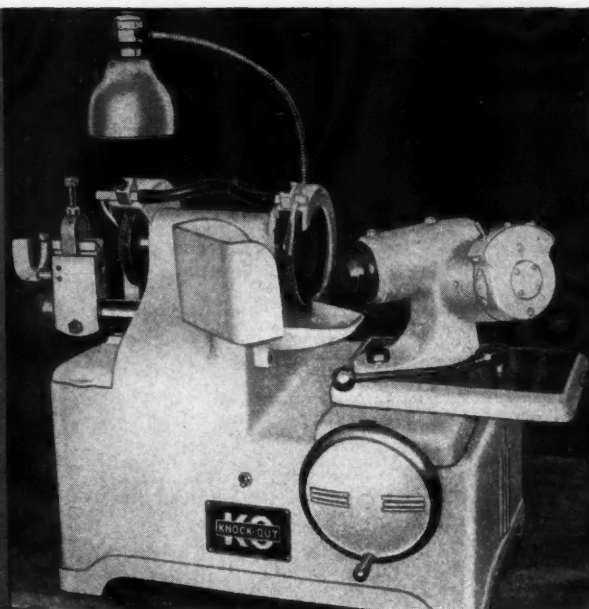
Large spindle bearings eliminate vibration in grinding wheel and valve, produces mirror finish on valve face in less time, with less stock removed.

Micrometer adjustment on butt grinder holds valve lengths accurate to .001".

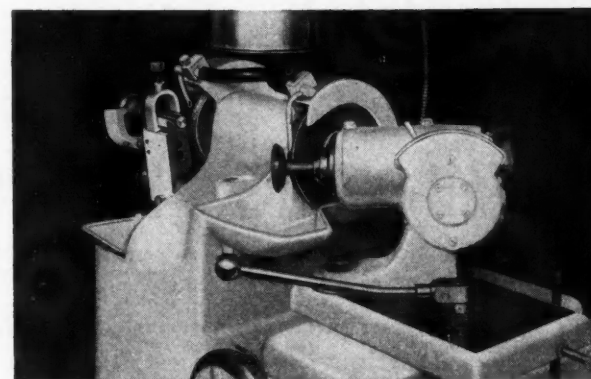
Rocker-arm attachment handles every size, is easily adjusted to hold correct contour.

Wet grinding insures perfect finish—eliminates overheating and burning.

Investigate this NEW "Knock-Out" Valve Refacer, find out how it will make you bigger profits in less time. Ask your jobber or Mail the coupon TODAY for complete details.



Diamond nib mounted on heavy shank insures perfect wheel dressing that produces mirror finish on valve face.



Head quickly, accurately set to correct angle. Coolant directed on work eliminates burning—lubricates wheel to keep it free cutting.

*if it's a LEE it's a "KNOCK-OUT"*

**K. O. LEE COMPANY**  
ABERDEEN, SOUTH DAKOTA

*Fill in and mail today*

K. O. LEE COMPANY

1103 First Ave. S. E., Aberdeen, S. Dakota

Please send us complete, illustrated details on the NEW "Knock-Out" Valve Refacer.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_



# D-X HEAVY DUTY MOTOR OIL



## CHOICE OF THOUSANDS OF FLEET OWNERS FOR PERFORMANCE

D-X HEAVY DUTY MOTOR OIL is widely used because it provides all the superior characteristics of Mid-Continent's famous solvent-processed oils: Heat-resistance, toughness, staying power... the plus qualities essential for severe service. Use D-X Heavy duty Motor Oil for cleaner engines, freer rings, minimum repair and overhaul expenses.

- HIGH DETERGENCY
- SLUDGE PREVENTION
- HIGH DISPERSION
- RESISTANCE TO OXIDATION
- RESISTANCE TO FOAMING

FOR LIGHT TRUCKS, COMMERCIAL CARS  
**D-X MOTOR OIL**

FOR ALL DIESEL ENGINES...  
**D-X DIESEL MOTOR OIL**

SEND FOR FREE FOLDER  
explaining all the ad-  
vantages of D-X Heavy  
Duty Motor Oil.

**Mid-Continent Petroleum Corporation**

Waterloo, Iowa

Terre Haute, Ind.

TULSA, OKLA.

Chicago

Omaha

# CONTINENTAL ENGINES ARE BUILT FOR THE JOB!



**POWER BY**



**Engines  
CONTINENTAL**

If Continental Motors builds an engine of the *horsepower* you need, then it's ten to one that Continental Motors builds the one best engine for your job.

There are as many as 20 different Red Seal models to choose from — not just a single engine — at each power level in the 20 to 210 h.p. range. You choose an engine for any transportation application within these limits, without compromise at any point.

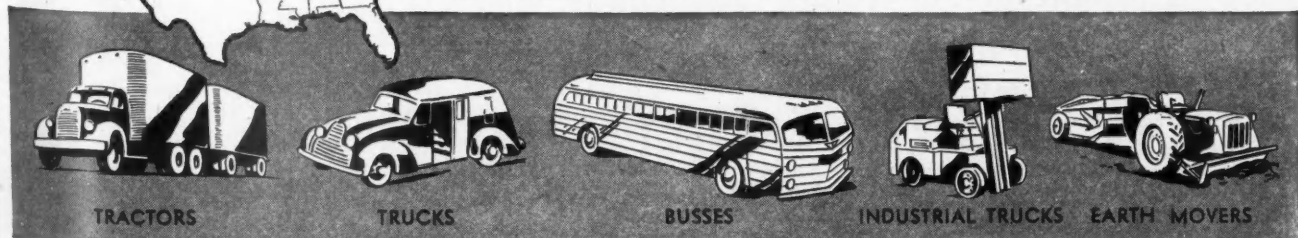
At each power level you'll find a model with performance characteristics closely geared to your specific needs. Varying weights and profiles at each point in the power range assure a model suited to your over-all design. Finally, Continental transportation engines are available for operation not only on gasoline, but on fuel and Diesel oils, and butane.

Whether the vehicle be an over-the-road truck or bus, a passenger car, or any specialized vehicle, it's a better and more reliable vehicle if it has Continental Red Seal power.

**COAST-TO-COAST  
NETWORK  
CONTINENTAL  
PARTS & SERVICE**

***Continental Motors Corporation***  
MUSKEGON, MICHIGAN

44 YEARS' SPECIALIZED EXPERIENCE BUILDING ENGINES FOR TRANSPORTATION, INDUSTRY, AVIATION AND THE FARM



TRACTORS

TRUCKS

BUSSES

INDUSTRIAL TRUCKS

EARTH MOVERS



# CARAVAN-TOP

## THE ALL-PURPOSE COVER FOR PICKUP TRUCKS

(Caravan Top Model 104 shown on International 1-Ton express body)



This revolutionary new frame and cover for pickup bodies has a definite place in commercial transportation as well as in light delivery. Although light in weight, Caravan Top is ruggedly-built and amazingly sturdy to withstand hardest wear and provides complete cargo protection under severest weather conditions. This handy top is designed to be removed or replaced quickly. Now available for all popular  $\frac{1}{2}$ ,  $\frac{3}{4}$ , and 1 ton standard pickup trucks. One-half ton model only \$89.50 F.O.B. nearest distributing point plus Federal and State Tax. Larger models slightly higher.

Caravan Top's frame is made of high tensile, rust-proof aluminum with smooth, round edges to prevent cover wear. Cover is top grade heavy duck,

weatherproofed and mildewproofed. Order from your automotive supplier now. If you order direct, please send us supplier's name.

# C. K. TURK CORPORATION

SOUTH BEND, INDIANA





# FOR *Tough* PULLS... *Heavy* LIFTS



Do your next  
job the easy  
way... specify  
Gar Wood.



## *specify Gar Wood*

You can't beat Gar Wood and Winches. For they're all designed, engineered, and built to do the toughest jobs with maximum efficiency, greatest safety, and lowest upkeep. Performance has been checked, tested, and proven

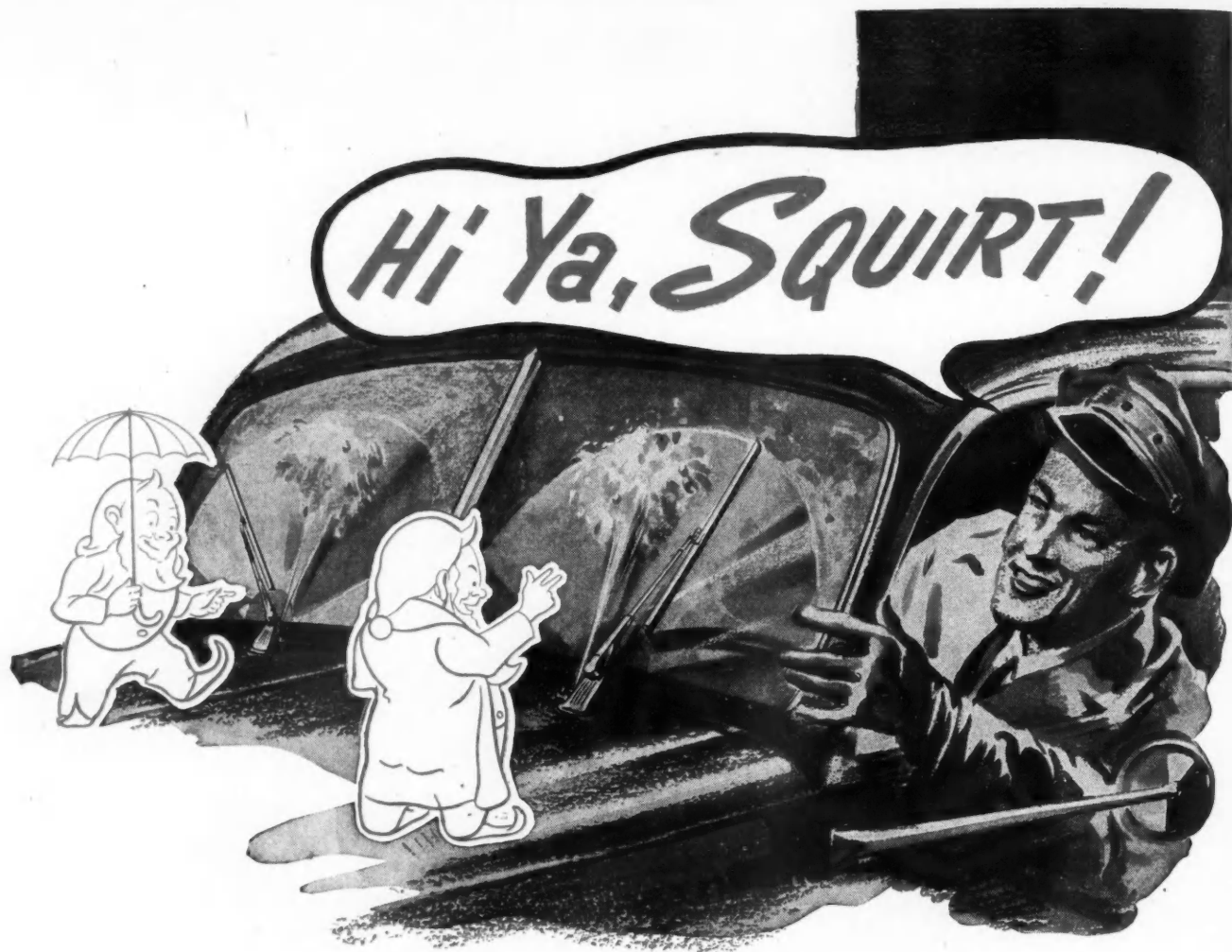
in the field... round the world.

No matter how tough, how "impossible" your particular job may seem, there's a rugged Gar Wood Crane or Winch to help make it easy and economical and safe... help you make money, faster.

**GAR WOOD**

**GW**  
TRADE MARK  
**INDUSTRIES**

HOISTS BODIES • ROAD MACHINERY • MOTOR BOATS • WINCH AND CRANES • HEATING UNITS



## Trico's two little ***SQUIRTS*** are the Driver's Pals

● It takes only the touch of a button. The Trico Automatic Windshield Washer squirts clean water on the windshield for 16 seconds. A few swings of the wiper blades complete the cleaning process.

This proven aid to safer driving is any driver's pal since it washes the windshield while he drives... and as often

as necessary for a safe, clear view of the road ahead. It lessens driving strain, night or day... winter or summer... in splashy weather... or when it's dry and dusty... or in foggy mists and sprays of light rain. It can be installed easily and economically on your trucks and buses.

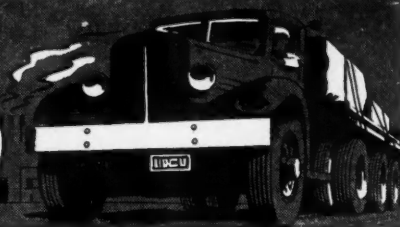
Don't squint! SQUIRT!



### *Automatic Windshield Washer*

Trico Products Corporation, Buffalo 3, N. Y.

# STANDARD ENGINEERS NOTEBOOK



## Heat-resistant grease stays in wheel bearings

RPM Wheel Bearing Grease is specially made for all types of wheel bearings. Because it withstands extreme heat, it won't melt and throw out even in hard service. This prevents lubricant from working onto brake shoes and keeps bearings from becoming dry. Where necessary, extra grease can be packed in hubs, thus assuring adequate lubrication at all times.

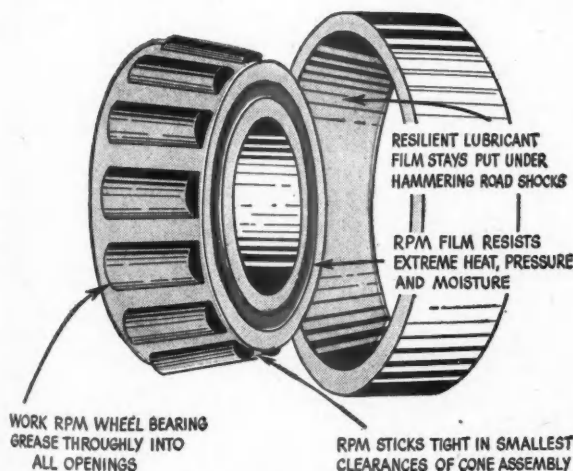
The tough, resilient film which RPM Wheel Bearing Grease spreads over bearings, won't break down under extreme pressure or jolts and shocks. It resists water and seals out dust and dirt.

Truck and bus manufacturers recommend using extra care in lubricating, cleaning, and adjusting wheel bearings.

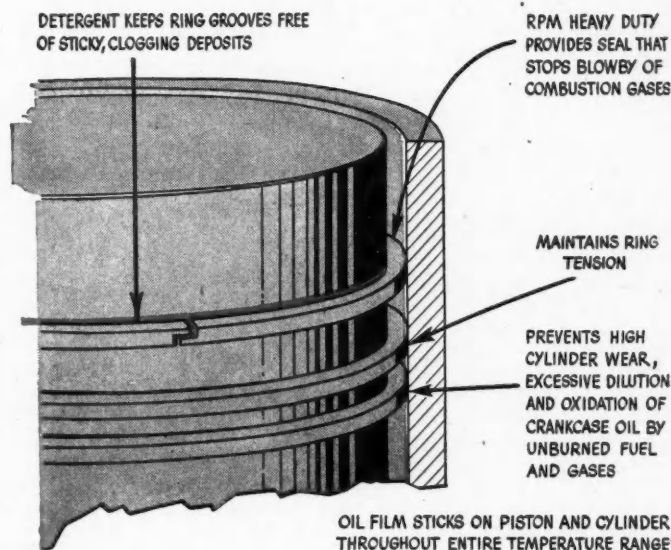
Handy guides that assure this are the free Standard booklets, "How to Service Wheel Bearings." There's one for light equipment and one for heavy equipment. Send for your copies.

CLEAN WHEEL BEARINGS  
CAREFULLY BEFORE LUBRICATING

IF PART IS DAMAGED REPLACE  
ENTIRE BEARING ASSEMBLY



For additional information and the name of your nearest Distributor, write Standard of California, 225 Bush Street, San Francisco 20, Calif.; The California Oil Company, 30 Rockefeller Plaza, New York 20, N. Y.; The California Company, 17th and Stout Streets, Denver 1, Col.; Standard Oil Company of Texas, El Paso, Texas.



## Heavy-duty motor oil reduces cylinder wear

Many fleet operators have eliminated stuck rings, blow-by and excessive cylinder wear by using RPM Heavy Duty Motor Oil.

This special heavy duty oil contains patented additives which remove sticky gum, carbon and lacquer from rings and ring grooves, keeping rings free so they can expand fully. With rings expanded, the tough lubricant film of RPM Heavy Duty Motor Oil forms a seal between rings and cylinder which prevents the force of combustion from driving gases and fuels down the walls.

RPM Heavy Duty Motor Oil sticks to metal at all operating temperatures. This assures unsurpassed lubrication at all times on surfaces of cylinders, pistons and rings, reducing wear to a minimum.

RPM Heavy Duty Motor Oil will resist sludge formation even in coldest operations, will not foam or corrode bearing metals.

FOR EVERY NEED A **STANDARD OF CALIFORNIA** JOB-PROVED PRODUCT



# Use Dorsey Z★R□ Transport

THE CONSTANT  
TEMPERATURE  
FROZEN FOOD  
CARRIER OF THE  
HIGHWAYS

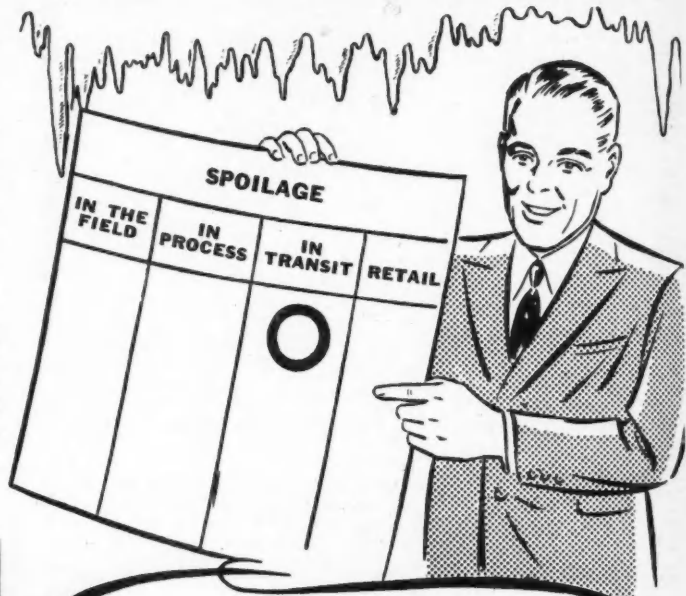


## Reduce Transport Spoilage to

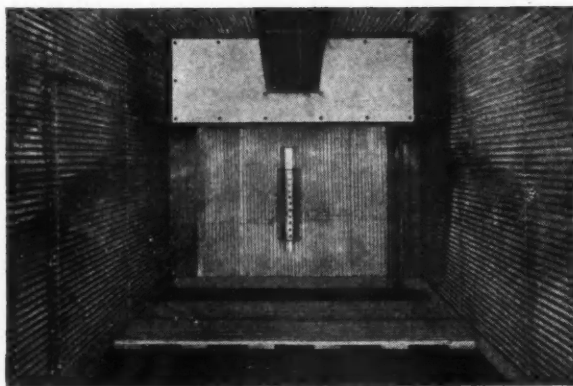
# ZERO

IT'S NEW . . . and available . . . especially designed to handle frozen foods in transit at zero and sub-zero temperatures. A modern mechanically refrigerated transport unit that maintains any interior temperature you select between  $-15^{\circ}$  and  $+70^{\circ}\text{F}$  with less than  $5^{\circ}$  variance . . . protecting your valuable fragile cargos . . . eliminating your transport spoilage!

Whether you handle frozen fruits, meats or vegetables, frozen seafoods, wax or chemicals . . . or any other perishable . . . you will find the Dorsey Z-R□ Transport the answer to your transport problem . . . a modern, completely engineered, completely road tested unit meeting your demand for constant temperature frozen food and perishable transport. It will pay you to investigate Dorsey Z-R□ Transport.



These Modern Specialized Carriers for Frozen Foods and Perishables of All Types Are Available for Early Delivery.



Cold air circulates freely around the load in this aluminum lined interior.

See Your Nearby Dorsey Distributor or Dealer for Complete Information—On Z-R□ TRANSPORTS—DeLUXE VAN BODIES—STAKE BODIES—POLE TRAILERS—SEMI or FULL TRAILERS—etc.

**DORSEY**

## DORSEY TRAILERS

ELBA, ALABAMA, U. S. A.,

MODERN DESIGNED TRANSPORTATION

# *FLEXIBILITY* and *SPEED*

WITH  
**WILLIAMS**  
"SUPERSOCKETS"



Williams SUPERSOCKETS provide the mechanic with a complete wrench system. Inaccessible places can be reached with a minimum amount of time and effort.

Quick-change wrench assemblies give SUPERSOCKETS remarkable versatility. Thin walls that fit in tight places, together with a variety of extensions and handles, allow SUPERSOCKETS to get where they are needed most. Sold by leading Automotive Distributors everywhere.

**J. H. WILLIAMS & CO., BUFFALO 7, NEW YORK**  
DROP-FORGINGS & DROP-FORGED TOOLS

**We didn't  
write this statement —  
EXPERIENCE DID!**



ON CONGESTED STREETS . . . OVER MOUNTAIN GRADES . . . THROUGH STORMS . . . ON CROWDED HIGHWAYS . . . DAY OR NIGHT . . .

**the best brake  
is AIR!**



Millions of miles of experience under every conceivable condition stands behind the statement "The Best Brake is AIR"—a statement that every truck and bus operator knows to be a fact! And experienced operators also know that the finest Air Brakes bear the name Bendix-Westinghouse—the oldest, largest, and most progressive manufacturer in the field. Regardless of the type of equipment you operate or the terrain

it encounters, Bendix-Westinghouse Air Brakes can add safety, driver satisfaction, and economy to your business. Let your Bendix-Westinghouse distributor show you how simple and inexpensive it is to modernize your present equipment with Air Brakes, or assist you in selecting, for new equipment, the right kind of Air Brakes for the specific job.

BENDIX-WESTINGHOUSE AUTOMOTIVE AIR BRAKE COMPANY  
ELYRIA, OHIO

***Bendix-Westinghouse***  
AUTOMOTIVE AIR BRAKES

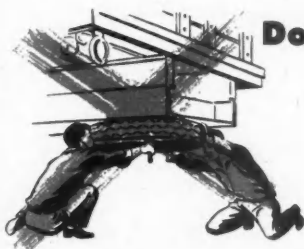
WORLD STANDARD  
OF SAFETY





**ONE MAN** can change  
even the heaviest truck  
tires and wheels with a  
**T. E. D. TIRE CARRIER**

**Tire changing is** a One-Man job on any truck or trailer equipped with a T.E.D. Tire Carrier. Even the huge 1100 x 22's used on the largest cross-country rigs can be unlimbered and set on edge on the ground without any strain or lifting. No possibility of dropping heavy tires and wheels—no chance of injury.



**Do away with** this old, costly, dangerous method. Install a T. E. D. TIRE CARRIER. All models may be mounted either side or rear—on new chassis before body is built or on your old rig. Simple to mount—no precision requirements.

**Easy Tire Changing**  
It's as Simple as



Loosen Release Lugs

Pull Carrier Out

Tilt Tire Upright



#### OWNER

Reduces costly delays, driver turn-over, saves running on a flat.



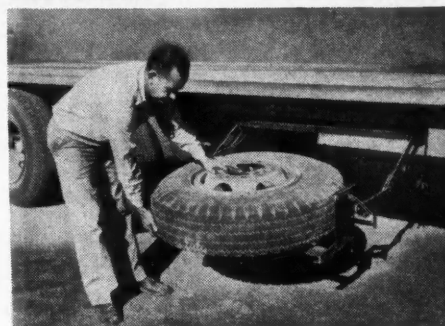
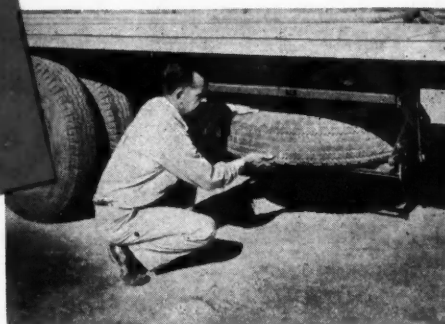
#### DRIVER

No chance of strain or injury. No waiting for help on bleak stretches of road.



#### MAINTENANCE MAN

Gives you a chance to use your skill and energy where it's needed and not wasted on heavy work of removing and replacing tire on rack.



#### 3 models to meet all requirements.

**MODEL A.** Handles tires to and including 825 x 20—Requires mounting space 8 in. deep.

**MODEL A.9.** Special for 900 x 20—Requires mounting space 8 in. deep.

**MODEL B.** Handles tires from 1000 x 20 to 1100 x 22—Requires mounting space 10 in. deep.



#### CORPORATION

928 South Flower St.  
Los Angeles 15, Calif.



**You're talking our language, Mister**

LO-EX\* PISTONS make new engines better and old engines like new—added power, smoother performance, greater economy of fuel and oil, longer engine life. That's why we say, "There are no better replacement pistons made."

OHIO is stocking parts suppliers with LO-EX PISTONS just as fast as possible. They don't stay long on the shelves these days, but they are available. Ask for them by name—LO-EX PISTONS by OHIO.

*\*LO-EX and LYNITE are registered trademarks of Aluminum Company of America, makers of castings for genuine Lynite Pistons.*

LOOK FOR THE TRADE MARK



*The* **OHIO PISTON**

*Company*  
CLEVELAND, OHIO

# YOUR Kellogg-American COMPRESSOR



## IS YOUR SILENT PARTNER

BODY and FENDER STRAIGHTENING with a pneumatic hammer is another service that adds to the growth and profits of your business. With this labor-saving tool you can smooth out dents quickly and uniformly—assisted by your *silent partner*—your

KELLOGG-AMERICAN compressor. *He* powers the hammer with a steady, even pressure of cool, clean air. And *he* does it the exclusive KELLOGG-AMERICAN way—quietly, smoothly, and dependably. *He* delivers more cubic feet of air per kilowatt hour. Volumetric efficiency is high. Operating costs are low. Plan to replace your old air compressor with a *new* KELLOGG-AMERICAN and add a money-making *silent partner* to your staff. American Brake Shoe Co., Kellogg Division, Rochester 9, N. Y.




A PRODUCT OF

AMERICAN

**Brake Shoe**

COMPANY

**KELLOGG DIVISION**

*More Air per Dollar* 



## FOR EXTRA PAYLOAD . . . THE *MIGHTY* WARD LA FRANCE

The powerful construction of the mighty Ward LaFrance means extra payload hauling. The added power and payload capacity of this heavy-duty truck is real assurance of economical operation.

The big, rugged, Ward LaFrance tractor has that essential combination of reliability for trouble-free operation and driver comforts for efficient long hauling or off-the-road trucking.

The mighty Ward LaFrance is built by the manufacturer of the giant M1 Army reconnaissance wrecker and the famous fire trucks—over 25 years of heavy-duty truck engineering.

For heavy hauling, you are sure with the mighty Ward LaFrance truck.

**Look for the big truck with  
the exclusive "flat top" fender**



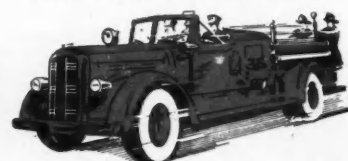
**WARD LAFRANCE TRUCK DIVISION**  
Great American Industries, Inc.

ELMIRA,



NEW YORK

Builders of famous Ward LaFrance Fire Trucks



for over Twenty-Five Years

# Full-Range Brake Control

## FOR EVERY SIZE TRUCK

★ Certainly the brake lining built for a pick-up won't hold on a ten-ton trailer—and, just as surely, the brake needs on the tractor differ from that on the trailer.

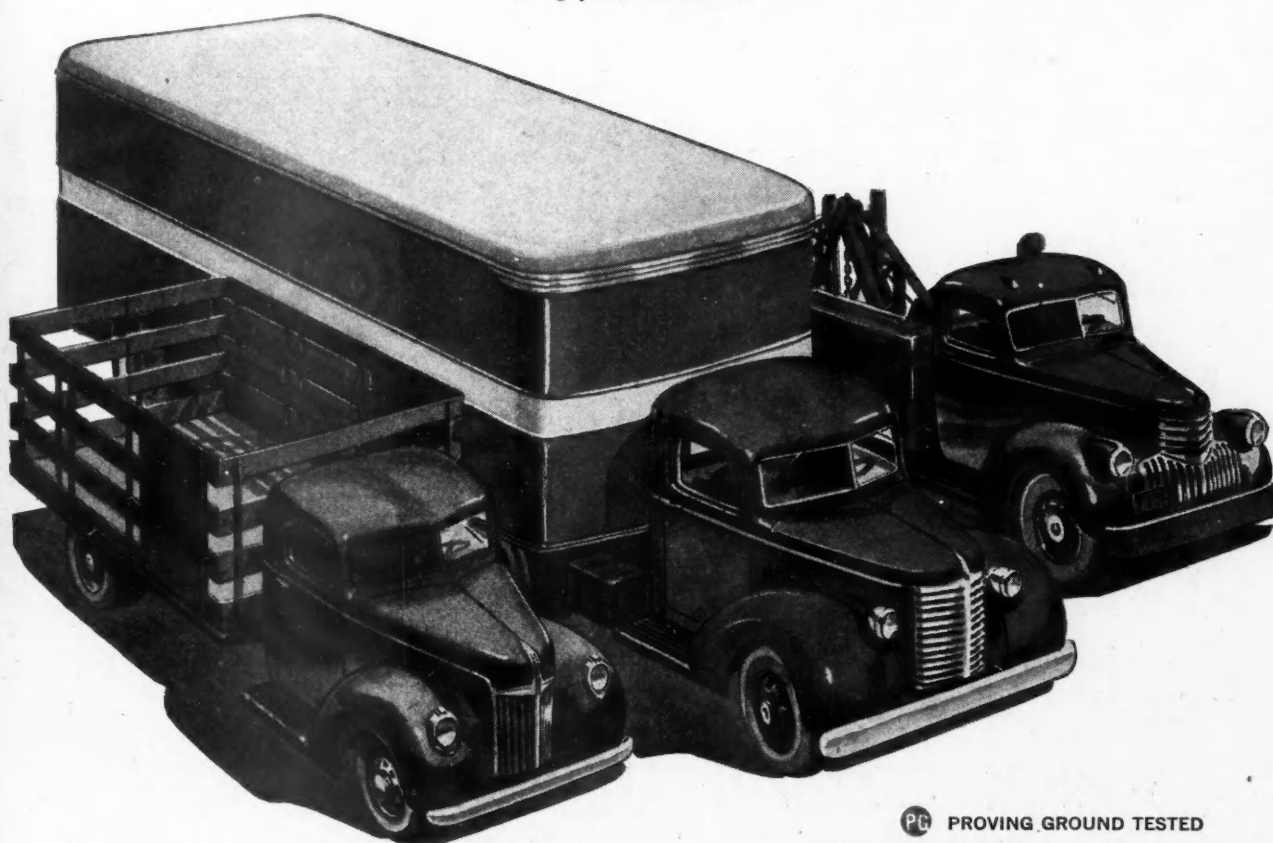
Actually, it takes *seven* different types of brake material to meet the specifications for various-sized trucks. And in most cases, it takes a combination of several of these materials for just *one* installation.

Raybestos manufactures all the different

brake materials to meet truck manufacturers' specifications and operating conditions. To make installations easy, Raybestos combines these materials in easily-identified sets for every size truck.

See your Raybestos jobber for details and estimates for your fleet. Whatever your requirements, Raybestos assures you *full-range* brake control—easy, positive *slow-down* control, as well as quick, smooth stops.

THE RAYBESTOS DIVISION of Raybestos-Manhattan, Inc.  
Bridgeport, Connecticut



CHECK BRAKES  
RELINE WITH



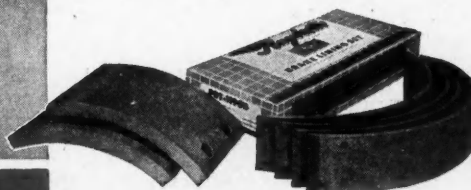
RAYBESTOS-MANHATTAN, INC.

# Raybestos

AMERICA'S BIGGEST SELLING BRAKE LINING

PG PROVING GROUND TESTED

BRAKE LINING • BRAKE BLOCKS  
CLUTCH FACINGS • FAN BELTS • HOSE  
for Cars, Trucks, Buses and Tractors



# THE *Only* BRAKE LOCK WITH A LIFETIME



**GUARANTEE**



## WANTED—DISTRIBUTORS

Reliable distributors are invited  
to write for information.

● Drivers like the Double Check because of the dependable control it provides when parking, winching, or stopping and starting on steep grades.

The Double Check Brake Lock assures *positive* all-wheel lock-up by holding brake pressure in lines until released manually. It is easy to operate . . . easy to install. It is dependable, and is the only brake lock carrying an *unconditional guarantee* for the life of vehicle upon which originally installed.

## PROVIDES *POSITIVE* ALL-WHEEL LOCK-UP FOR

- OIL FIELD TRUCKS
- WINCH TRUCKS
- LINE TRUCKS
- DUMP TRUCKS
- CONCRETE MIXERS
- SERVICE TRUCKS
- POLE SETTERS
- MULTI-STOP DELIVERY TRUCKS

# **DOUBLE CHECK BRAKE LOCK**

## **ALLIED EQUIPMENT & SUPPLY CO.**

200 PORTWOOD STREET      HOUSTON 11, TEXAS, U.S.A.      CABLE CODE: ALQUIPCO  
Exclusive National Distributors and Exporters for The Sharp Manufacturing Co., Nelsonville, Ohio, U.S.A.





U. S. Patent  
No. 2323815

## Wausau OIL-SAVRS won't break

THERE'S nothing about an OIL-SAVR Piston ring that can break . . . no "egg shell" spacer. Instead, a tough *action-alloy* center unit. Yet this ring is satiny *smooth* in its contact with cylinder walls . . . smoother than you would believe possible in a ring that controls oil as effectively as OIL-SAVR. This exceptional operating smoothness is another OIL-SAVR exclusive . . . made possible by its famed "safety-center-unit" construction. Non-breakable, non-car-

bonizing, the OIL-SAVR safety-center-unit keeps the ring clean and controlling oil for thousands of extra miles . . . keeps it free running and lively . . . *longer*. Wausau OIL-SAVR piston rings are available in custom-made sets for passenger cars, trucks and tractors. Ask your jobber.

**Wausau Motor Parts Company**  
Wausau, Wisconsin





# WAUSAU

# Oil-savr

THE FREE-RUNNING RING WITH  
THE SAFETY CENTER UNIT

# Get the double protection of GUIDE SEALED BEAM HEADLAMP UNITS

Night after night, thousands of trucks and buses reach their destination safely and on schedule because of Guide Sealed Beam headlamps. Through their double-protection feature, Guide Sealed Beam units give Sealed Beam lighting at its best... there is NO DIM-OUT and NO BLACK-OUT.

## NO DIM-OUT

—because Guide Sealed Beam units are permanently sealed against dirt, dust and traffic film. They maintain their brightness and efficiency throughout the life of the unit.

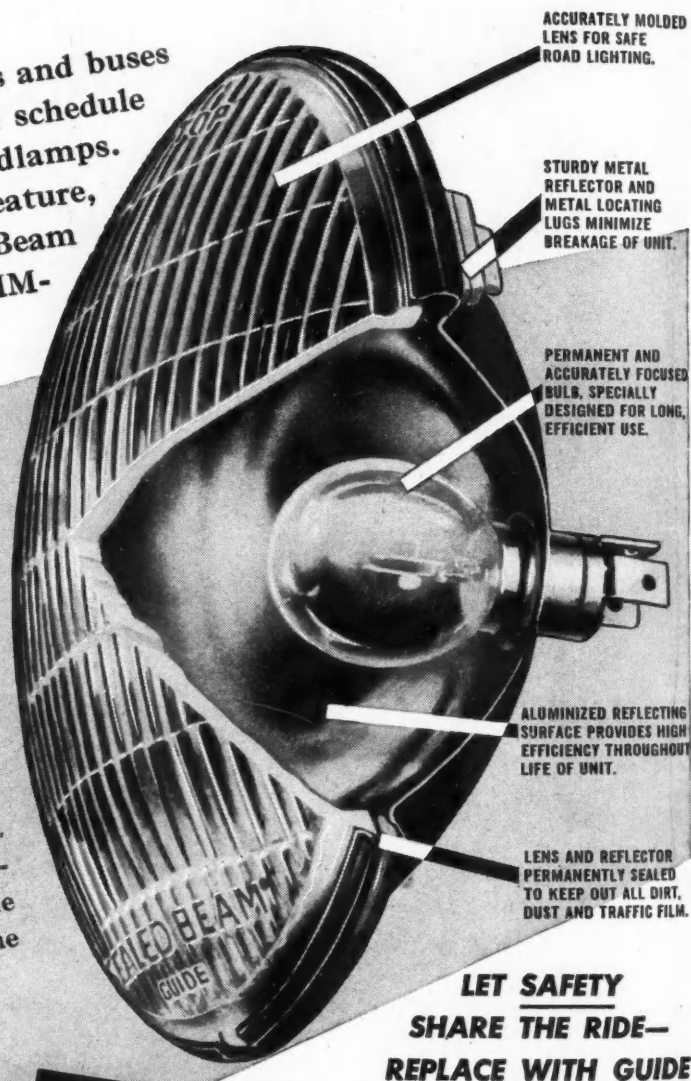
## NO BLACK-OUT

—because even if a lens is cracked, Guide Sealed Beam units do not fail. Until the damaged unit can be replaced, a separate bulb inside the sealed unit continues to light the way safely.

## GUIDE LAMP— A UNITED MOTORS LINE



Guide Sealed Beam replacement units and Guide lamp service parts are sold by United Motors Service distributors.



**LET SAFETY  
SHARE THE RIDE—  
REPLACE WITH GUIDE**



**Safe Headlamps Are "Correctly Aimed" Headlamps—  
Have Your Headlamps Checked Today**

MAN MADE HARDSHIPS  
MAKE TOMORROW'S  
MODELS BETTER



The tests which determine the design of tomorrow's trucks are the toughest man can devise. They demand and get the best in *flexible power transmission*.



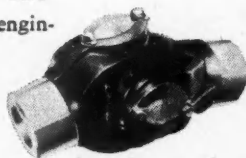
*You Get*  
**Quality · Production  
Experience**

*When You Specify*  
**BLOOD-BROTHERS**  
*Universal Joints*

When automotive designers, builders and users must "take power around corners," they turn to Blood-Brothers Universal Joints because we supply more than a product.

High quality is a tradition at Blood-Brothers. Our production facilities and our engineering "know-how" are built on a 40-year record of continuous service to the automotive field. From test field to production line, we are well-equipped—in men and machines—to "take power around corners."

Learn what it is that has earned the respect and confidence of the automotive field. Write for complete engineering data.



A typical "N" Series  
Needle Bearing Uni-  
versal Joint



**BLOOD-BROTHERS  
MACHINE COMPANY**  
ALLEGAN, MICHIGAN  
*Universal Joints*

Division of Standard Steel Spring Co.



**PUTTING ON CHAINS WAS  
TOO MUCH TROUBLE!**

*So he couldn't stop and  
wound up in real trouble!*

Buying Campbell Lug-Reinforced Tire Chains is the first step in keeping your equipment on the road and out of trouble. Making certain these chains are on the wheels when roads are icy is the second. Don't let your operators leave the garage without chains in bad weather!

The exclusive, patented\* saw-toothed lugs of Campbell Lug-Reinforced Tire Chains dig right into ice and snow for the grip that means safe starts and stops without dangerous slip and skid. Tough, hard-wearing steel and one-piece construction mean increased chain mileage. *International Chain & Mfg. Company, York, Pennsylvania.*



*The  
CAMPBELL  
Line*

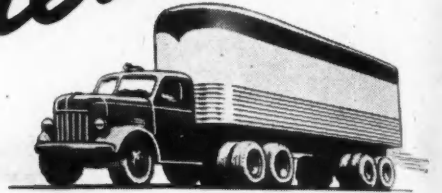
\*U. S. Pat. No. 2,093,547

Canadian Pat. No. 223,568

**CAMPBELL**  
*Lug-Reinforced*  
**TIRE CHAINS**  
THE CHAIN WITH THE SAW-TOOTH GRIP

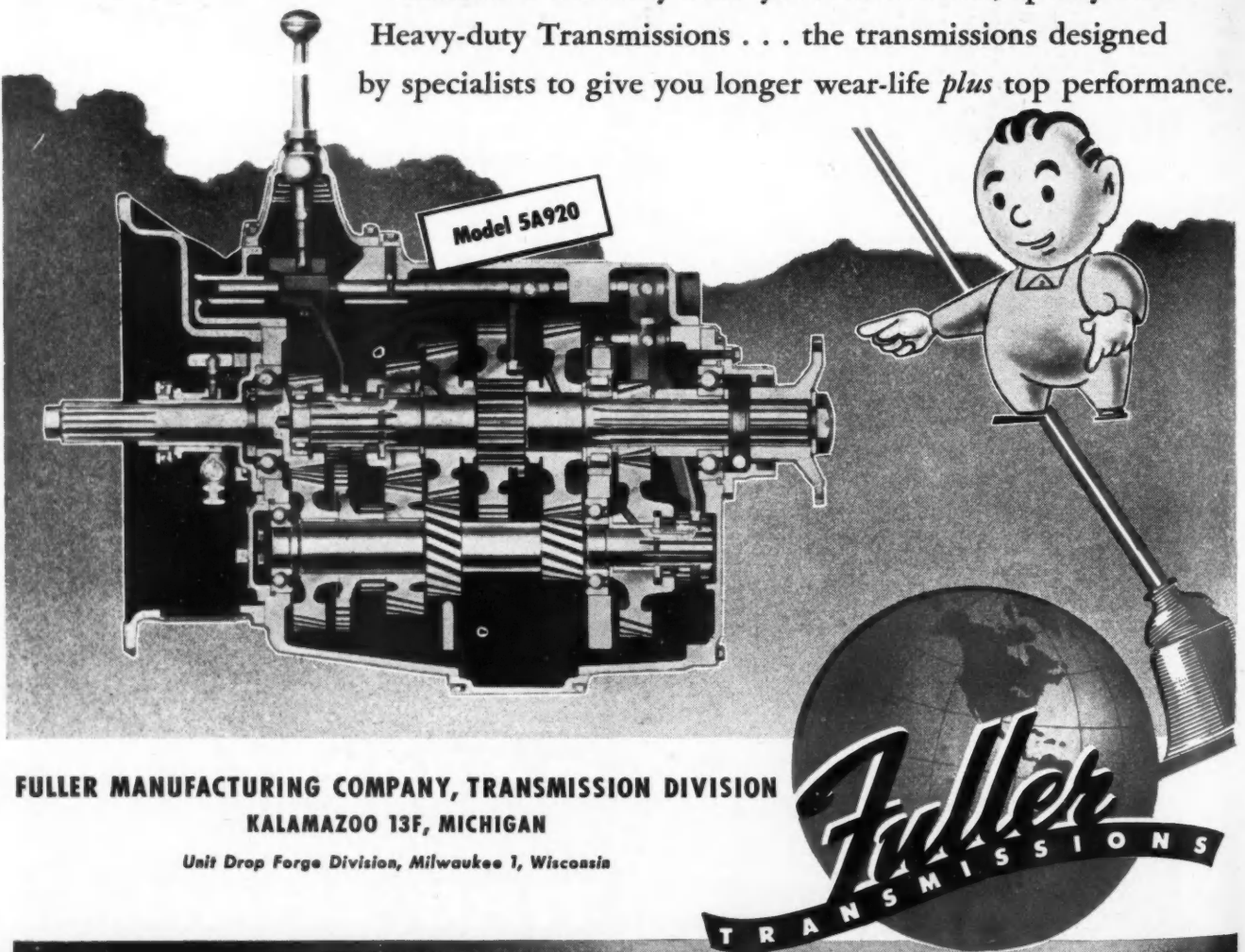


# Heavier loads faster schedules



Truck operators, confronted with increased costs, are solving this particular problem by using more powerful trucks . . . hauling *heavier loads on faster schedules.*

For your big trucks and tractors, assure these profit-making advantages by specifying the sub-assemblies. To get the exact balance . . . the maximum efficiency from your entire truck, specify Fuller Heavy-duty Transmissions . . . the transmissions designed by specialists to give you longer wear-life *plus* top performance.

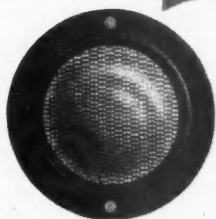


**FULLER MANUFACTURING COMPANY, TRANSMISSION DIVISION**  
**KALAMAZOO 13F, MICHIGAN**

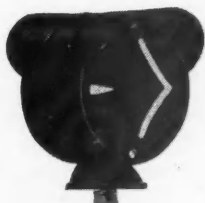
*Unit Drop Forge Division, Milwaukee 1, Wisconsin*



*make light work for you!*



Model No. 217 ARROW REFLECTOR



Model No. 8  
ARROW DIRECTIONAL SIGNAL



**... with ARROW's Complete Line of  
Legally Approved Lighting Equipment**

Up-to-date Arrow lighting equipment puts light to work for you at night. Arrow reflectors, flares and tail lights have real stopping qualities. Arrow sealed-beam fog lamps and headlamps give you see-power on the highway. Arrow directional signals make every turn you take a *good* turn. *All* Arrow products are sturdily engineered for long-lasting performance. Follow Arrow to greater *Safety After Dark*.

ARROW SAFETY DEVICE CO., MT. HOLLY, N. J.

SAFETY AFTER DARK

**75% OF ALL  
McCREARY TIRES GO TO  
BIG FLEET OPERATORS!**

*Standard Building Products Company,  
Detroit manufacturer of cement blocks,  
uses McCreary Tires to help keep trucks  
rolling on a 2-way haul.*

The 35 trucks in Standard's fleet are constantly on the move. They haul sand and gravel—22 tons at a time—into the Detroit plant from gravel pits 25 miles away. Then finished concrete blocks roll to the jobs at the rate of 22,000 a day.

Standard, like hundreds of other fleet owners, has used McCreary Tires for years. As Mr. John T. Clark, Secretary and Treasurer, says, "*We've had good success with these tires. Heavier rubber, better workmanship and lower mileage costs sell us on McCrearys.*"

Of course there are built-in reasons for McCreary's popularity with fleet operators. McCreary Tires are made of the finest grades of rubber and rayon cord, scientifically processed by the most modern methods and equipment. Master craftsmen check, inspect and recheck each tire at more than 40 points in its manufacture. The result: a tougher, sturdier carcass that will take more recaps.

For longer service at less cost get McCrearys!



MANUFACTURERS OF QUALITY TIRES FOR OVER 30 YEARS

**McCREARY TIRE AND RUBBER CO. • INDIANA, PA.**



**NOW...**

# **MORE LIGHT THAN EVER**

**with G-E Sealed Beam Lamps**

THE NEWLY IMPROVED G-E Sealed Beam Lamp makes night driving safer than ever before. And here's why! Wattage for the passing beam has been stepped up to 35 watts, giving  $16\frac{1}{2}\%$  more light—and the new 45-watt driving beam gives  $14\frac{1}{2}\%$  more light—all at no increase in price! New wattages conform to S.A.E. specifications.

This amazing headlamp puts added light where it's needed, in the zone where safe seeing is most vital. Now you can have more headlighting for your money—not only when lamps are new, but throughout lamp life. Install G-E Sealed Beam Lamps...

## **THEY DO NOT GROW DIM**

1. Actual road tests show that the average G-E Sealed Beam Lamp maintains 99% of its original light output up to the very end of lamp life.
2. G-E's all-glass, hermetically sealed construction makes it impossible for moisture, air or dirt to get into the lamp.

NOTE: The G-E Sealed Beam Lamp fits right or left in any make of car originally equipped with the sealed beam system or adapted for it.



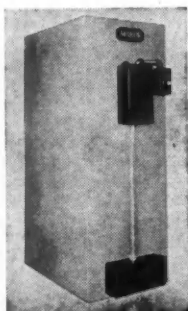
**"ALL-GLASS" SEALED BEAM  
G-E LAMPS**  
**GENERAL  ELECTRIC**

**FOR SAFETY AT NIGHT—AIM HEADLIGHTS RIGHT!**

## New Products

(CONTINUED FROM PAGE 158)

### P112. Vapor Degreaser



An improved Vapor Degreaser embodying an ingeniously controlled cool-air principle has been developed by the Mabor Co., Rahway, N. J. Electric plug-in only is required for operation. The degreaser is self-distilling and completely self-contained. Built-in storage

tanks are provided. By increasing the flow of cooling air, vapor level oscillation is substantially reduced. As a result, the consumption of solvent is also reduced. An extra heater, foot pedal operated, helps to increase the vapor formation and overcome the shock load as work is placed in the machine.

*Use Free Postcard for More Details.*

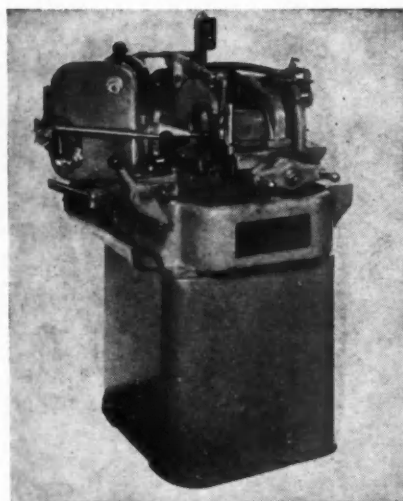
### P113. Air-Hydraulic Press

A new 5-ton air-hydraulic press designed for bench mounting has been introduced by Bryant Products Co., Jackson, Mich. Air pressure from any convenient outlet is converted to hydraulic energy to operate the ram. There is a built-in oil reservoir, and many fewer moving parts than hand-operated models. A four-way valve provides accurate control.

*Use Free Postcard for More Details.*

### P114. Valve Regrinder

A heavy-duty valve regrinder that weighs 1100 lb., and features a 1-hp. motor driving a 10-in. wheel, is announced by Van Norman Co., Springfield, Mass. A ½-hp. motor



powers the automatic chuck with 1-in. capacity. The result is a machine with unusual capacity and speed. A vernier scale is graduated in degrees and minutes, permitting application on valves with split degrees.

*Use Free Postcard for More Details.*

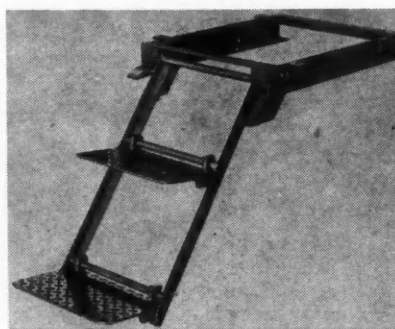
### P115. Carfoam Cleaner

Magnus Carfoam, a mild soapless cleaner with "wetting action," is announced by Magnus Chemical Co., Inc., Garwood, N. J. It is a neutral, non-alkaline, soapless cleaner which, according to company claims, does not streak or spot the finish after drying. Chamoising is said to be unnecessary even on windows. The cost figures out at about three cents per passenger car and the cleaner is equally effective for trucks.

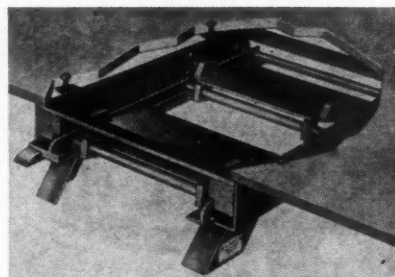
*Use Free Postcard for More Details.*

### P116. Folding Step

A new Kaasco Folding Truck Step has been introduced by the Cam Tool Co., Inc., 288 21st St., Oakland, Cal. The step may be attached to the rear or side of any truck or trailer and enables the driver to get into and out of the truck with ease.



On trucks having beds of the same thickness throughout and no flanges at side or rear, the step is readily attached by four bolts. Where the truck has a flange, a simple pair of fittings is available for positioning it below the flange.



The step is of welded steel construction, folds into its own frame when not in use, where it is held by a positive automatic lock. When extended, the lower of the two steps is 21 inches below the bottom of the truck bed.

*Use Free Postcard for More Details.*

### P117. Curved Wiper Blade

Trico Products Corp., Buffalo, has announced a new line of wiper blades for simple curved glass windshields, including a rugged heavy-duty model for commercial vehicles. A feature of the molded rubber wiping blade is that it carries an internal resilient leaf-spring member, concealed within the rubber channel, for even distribution of contact pressures. The new product is said to prevent blocking by snow or ice.

For more complex curves in windshields

and rear windows of the future Trico has developed an advanced type of wiper blade. This has a curved molded rubber wiping edge with a supporting flexible back so constructed as to permit the blade to follow the contour of the glass in movement in and out of various degrees of curvature.

*Use Free Postcard For More Details.*

### P118. Work Helper

The picture tells the story of this handy Visco truck step which hangs on the truck tire and is manufactured by Visco-Meter



Corp., Buffalo. Sturdily built, it is adjustable to either size of wheel or size of mechanic. The price is \$15.

*Use Free Postcard for More Details.*

### P119. Low-Hydrogen Electrode

A new electrode which greatly simplifies the welding of high sulphur, free-machining steel and of certain high tensile, low-alloy steels, is announced by The Lincoln Electric Co., Cleveland. The new electrode, known as "Shield-Arc LH-70," makes possible a faster weld on a number of types of steel.

*Use Free Postcard for More Details.*

### P120. Brake Shoe Grinder

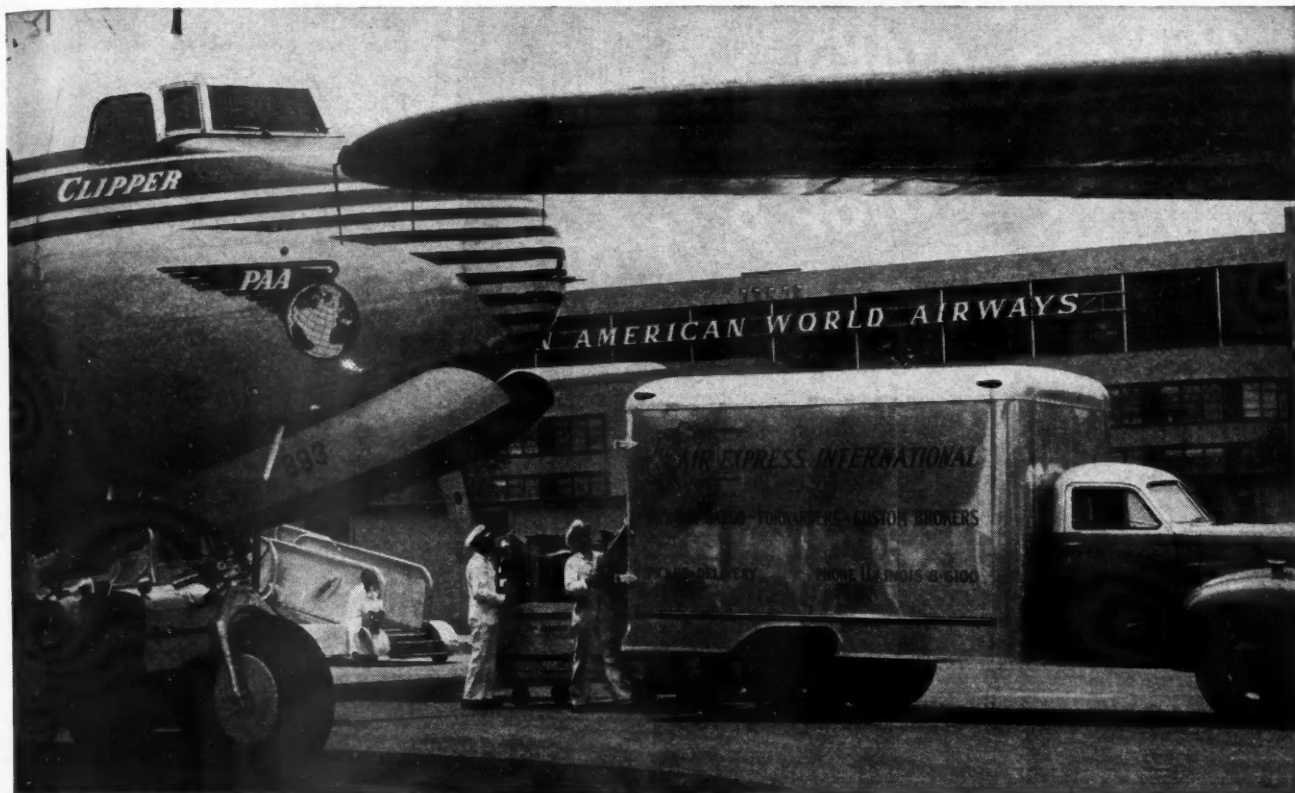
A New Precision Radius Type Brake Shoe Grinder, has been announced by Barrett Equipment Co., St. Louis. When the machine is set for one shoe, all others of



its size and type are ground to identical radius, which is determined from anchor end of shoe thus assuring uniform "new shoe" accuracy. No adapters or loose parts are necessary. Made in two models: B-300

(TURN TO PAGE 222, PLEASE)

# GIVE WINGS TO YOUR TRUCKS WITH ALUMINUM AND MAGNESIUM!



## **E·B·Co** ARMORLITE Van Panels CUT DEAD WEIGHT for Bigger Payloads

From the moment you install an *Armorlite* body on your truck, you cash in on these cost-cutting features that mean *dramatic savings per trip*—whether your truck is loaded or empty.

**ALUMINUM - MAGNESIUM CONSTRUCTION** reduces dead weight tremendously, and lets you *carry that much extra payload*. When running empty, this weight reduction saves on gas, tires, wear and tear.

**NO OTHER TRUCK BODY FRAME  
SO STRONG, SO LIGHT**

... All framing exclusively designed die-formed, die-shaped *Magnesium*.

### **DIE-SHAPED ALUMINUM PANELS**

... All panels, including roof, of aluminum, die-shaped for beauty and ease of replacement. Bodies available polished or painted to users' specifications.

### **LARGER BODY INTERIORS**

accommodate bigger loads permitted by greatly reduced body weight. Full 88" inside width and 78" inside height.

All welded steel floor with non-skid, diamond plate surface. Heavy duty rear bumper, integral with floor, with built-in combination rear step and license plate holder. All bodies skirting.

*Available through distributors everywhere. Write today for literature and prices*

By the World's Largest



Builder of Submarines

**Commercial Body Division, ELECTRIC BOAT COMPANY, Groton, Conn.**





**GREAT STARS - and a Great Star Performer**

SIRIUS, the "Dog Star," is the brightest of all stars. A mighty furnace of glowing red fire. Almost  $2\frac{1}{2}$  times larger than our own Sun, and 28 times more brilliant. And a mere matter of 51 million million miles distant from the Earth.

**BRAKE PARTS  
BRAKE CABLES  
BRAKE TOOLS  
BRAKE FLUID**



**C**LOSER to home than Sirius is that great "star," the EIS Line, for 15 years a bright spot in the automotive firmament—and a recognized "star performer" in the field of brake repair.

Replace with EIS Brake Parts and insure against the grief that often follows the use of brake parts of unknown origin and doubtful quality.

*From your jobber. Write us for particulars.*

**THE EIS AUTOMOTIVE CORP.**  
Middletown, Conn.

## New Products

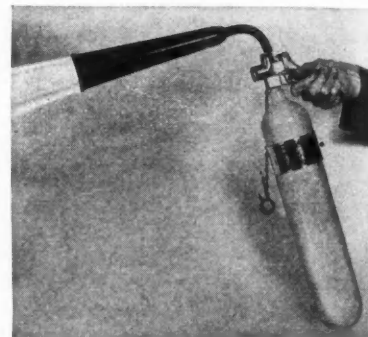
(CONTINUED FROM PAGE 220)

for passenger cars and light trucks, and B-310 for universal use on passenger cars and trucks.

*Use Free Postcard for More Details.*

### P121. Midget Extinguisher

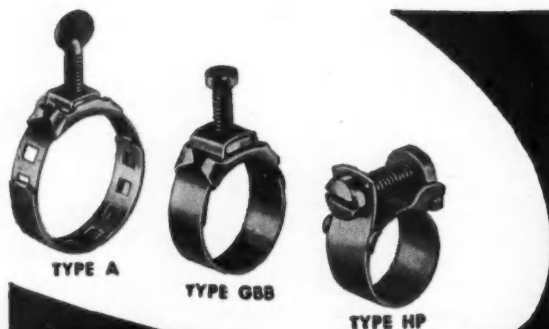
A new midget fire extinguisher, weighing less than 12 lb. and having an overall length of 22 in. has been announced by



American-LaFrance-Foamite, Elmira, N. Y. Called the Alfco Speedex, it is operated by squeeze type valve and contains 3½ lb. of carbon dioxide.

*Use Free Postcard For More Details.*

(TURN TO PAGE 224, PLEASE)



## WITTEK NOC-OUT HOSE CLAMPS

The standard of the industry. Quick-tightening, perfect leakproof hose connections, for original equipment and replacement. For Radiator, Heater, Booster Brakes and High Pressure hose connections.

**WITTEK MANUFACTURING CO.**  
4305-15 W. 24th Place, Chicago 23, Ill.

## A Two-Minute Job Undersize or Odd Size Bearings

This compact unit will handle all shell bearings. Bores individual bearing shells to any predetermined size, also resizes eccentric bearings. Handles undersized and special sized bearings. Provides a mirror finish in less than two minutes.



## TOBIN-ARP Shell Bearing Boring Machine

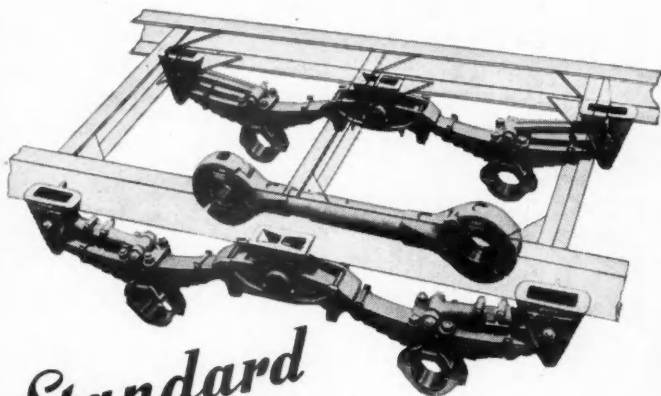
Full details sent upon request.

## TOBIN-ARP MFG. CO.

2845 Harriet Ave. S.

Minneapolis 8, Minn.

# Faithful Service



*Standard*  
**UTILITY**  
**DUAL AXLE UNITS**

Under License From Utility Trailer  
Mfg. Co., Los Angeles, California



*Standard*  
**AXLES**

**PROVED IN 9 YEARS . . .**

*over the Roughest Going!*

**NO WHEEL BOUNCE! NO BRAKE CHATTER!  
NO LOAD TRANSFER!**

Only Standard-Utility Axles with Torque Arm and Standard Axles provide trailer economies under all conditions of operating. Tubular axles absorb shock . . . Torque Arms prevent braking forces from being passed on to a second axle. Thus, load transfer . . . wheel bounce . . . brake chatter are eliminated in Standard assemblies — brakes last longer . . . tire life increases . . . maintenance costs drop. Get acquainted with Standard-Utility Tandem Unit and Standard Axle facts now. Write today for complete engineering data!

MANUFACTURED BY

*Standard Forge & Axle Company*  
MONTGOMERY 2, ALABAMA

AXLES

BRAKES

FORGINGS

TRAILER PARTS

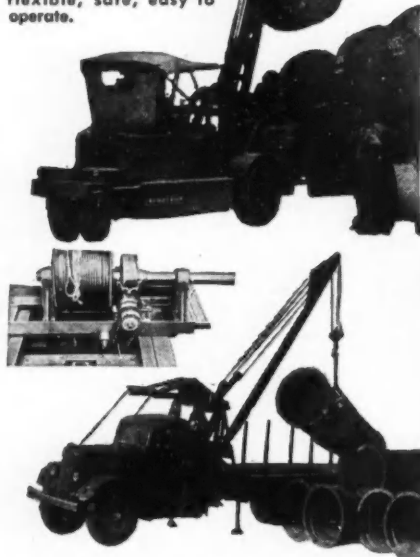
JANUARY, 1947

Use postage-paid card inserted at page 57 for free information on advertised products

223

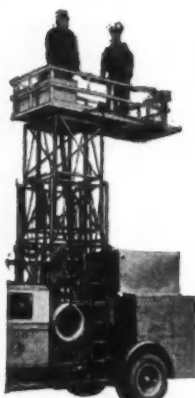
**SILENT HOIST & CRANE CO.**  
Pioneer Mfrs. of  
Truck Winch & Crane Equipment

**KRANE KAR** Swing Boom Mobile Crane: for materials-handling . . . lifting, transporting, positioning, gasoline or Diesel, 1 1/4, 2 1/2, 5 and 10 ton capacities, 9 to 37 ft. booms (or telescopic booms), solid or pneumatic tires. Self-stabilizing without jacks or outriggers; unobstructed vision; fast, flexible, safe, easy to operate.



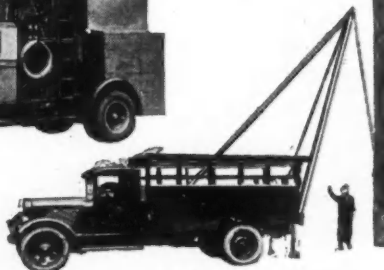
**WINCHES:** Capstans; Single and Double Drum, Jaw Clutch, Keyed and Friction Clutch Winches. 2,000 to 50,000 lb. Capacities.

**SWING BOOM CRANES:** Truck: Motor Power Operated; high capacity; takes up only a small space. For handling transformers, cable reels, lamp posts, trees, poles, manhole castings, etc. 9 to 31 ft. booms; one to 10 ton capacities.



**TOWERS:** 2 or 3 section type and Pantograph types, with plain, revolving or racking platforms.

**TRIPOD POLE DERRICKS:** for 35 ft., 45 ft., and 60 ft. Poles; single piece or telescopic side legs; removable cast steel fittings.



**USERS:** AT&T; N. Y. Tel Co.; T.V.A.; Consolidated Edison Co.; W.U.; Municipalities throughout America.

**WRITE FOR CATALOGS:**

No. 58—KRANE KAR No. 60—Truck Equipment

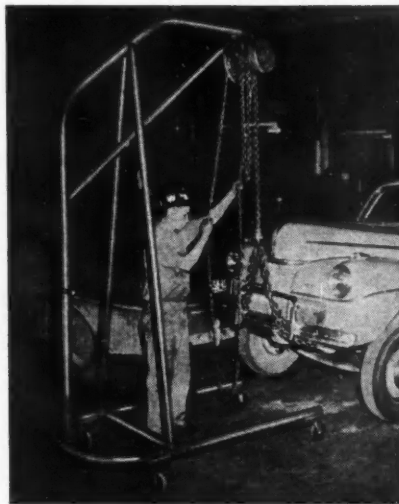


**New Products**

(CONTINUED FROM PAGE 222)

**P122. Universal Hoist**

A mobile hoist of 1-ton rated capacity which can be used for transporting as well as lifting is announced by Almco Inc., Albert Lea, Minn. Known as the Almco Universal Hoist, this unit is of sturdy welded tubular steel construction and is designed to withstand abuse. It rolls freely on four heavy-duty ball bearing casters, and the U-shaped base goes easily into

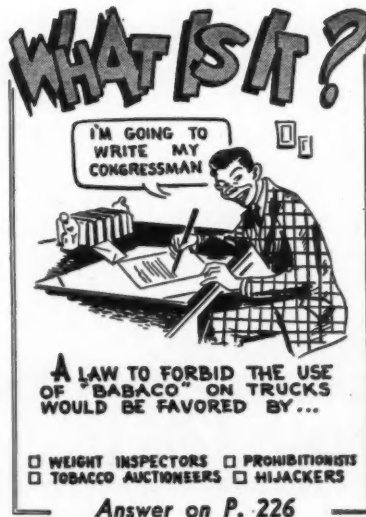


tight places. Can be furnished with a hand-operated worm-drive winch as illustrated, or with an electric or chain hoist instead. It is regularly available in both 7 ft. and 9 ft. over-all height, with greater heights available on special order.

**Use Free Postcard For More Details.**

**P123. Hub-Cap Remover**

A hub-cap remover that makes the operation remarkably simple, is being manufactured by Associated Producers, Inc., Detroit. (TURN TO PAGE 226, PLEASE)



Answer on P. 226

**Spills MEAN  
WASTED DOLLARS**



**and they're NOT  
necessary!**

Because VENTALARM, the whistling tank fill signal, does away with gasoline blowbacks and overfilling . . . helps cut fleet operating costs to the minimum.

VENTALARM saves time as well as money. Tanks can be filled at full pumping speeds to the proper predetermined level within the tank, without danger of spills! With VENTALARM, there's just one thing to remember: fill only while the whistle blows!

**VENTALARM:**

- eliminates spillage . . . saves time and money
- creates safety expansion zone in tank
- lessens hazard of fires

12 makes of taxicabs, buses and trucks have the money-saving VENTALARM as standard equipment. When ordering your new units, be sure to specify VENTALARM!

**SCULLY SIGNAL COMPANY**  
CAMBRIDGE 41, MASS.





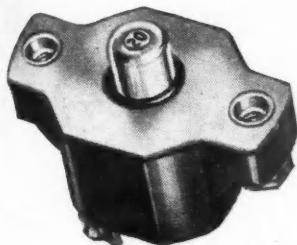


Automatic Reset  
5 to 40 amps.  
12 V., DC Max.

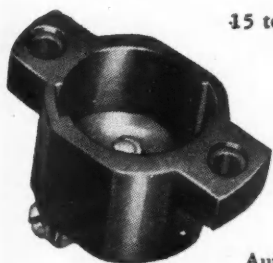


## Positive Circuit Protection without Nuisance Fuse Replacements

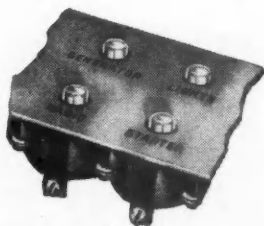
# Klixon Circuit Breakers



Manual Reset  
(weatherproof  
case)  
15 to 40 amps.



Automatic Reset  
5 to 40 amps.



Typical Circuit Breaker  
panel installation, manual  
reset type breakers.

Now you can provide "life-of-the-vehicle" circuit protection on all cars, trucks, busses, tractors and other mobile equipment by simply installing Klixon Circuit Breakers in all electrical circuits.

Because Klixon Breakers are permanent protective devices with nothing to burn out, they overcome the disadvantages of fuses which burn out and must be replaced. Their simple actuating element, the Spencer disc, "opens" the circuit whenever a dangerous short or overload occurs. And since it can operate repeatedly, it provides intermittent circuit operation enabling the vehicle to reach a repair station where the trouble can be remedied. Other Klixon advantages include—positive screw type terminals, elimination of fuse replacements, no nuisance tripouts as long as the circuit is normal.

Klixon Circuit Breakers are available in a wide variety of ratings, automatic or manual reset types, with weatherproof or open cases. Their reliable, sure protection is unaffected by shock, motion or vibration. Write for information and samples.

# KLIXON

TRADE MARK REG. U. S. PAT. OFF.

**SPENCER THERMOSTAT COMPANY**

1601 Forest Street, Attleboro, Mass.

**Snap-on Tools**  
THE CHOICE OF BETTER MECHANICS



**SNAP-ON TOOLS CORPORATION**  
8026A 28th AVE. KENOSHA, WIS.

**WAUKESHA**  
*Multi-Fuel*  
**ENGINES**  
DIESEL OIL  
GASOLINE  
BUTANE  
ALL LIQUID OR GASEOUS FUELS

The right braking material  
for any commercial vehicle

CUSTOM-BUILT SETS  
CBB SETS  
THERMO-BLOCKS

**Thermoid**  
THERMOID COMPANY - TRENTON, N. J.

**ZEHR**  
COLLAPSIBLE TRUCK BACKS



Safe... easy and simple to handle. Zehr Truck Backs are all-welded steel designed for great strength and long continuous service. They are theft-proof, rust-proof and flexible.

Write for details and prices.

**ZEHR PRODUCTS COMPANY**  
2130 East Hazzard Street, Philadelphia 26, Pa.

Specify  
**Velvetouch**  
BIMETALLIC FRICTION MATERIAL  
for  
**CLUTCHES AND BRAKES**  
**THE S. K. WELLMAN CO.**  
CLEVELAND, OHIO

## New Products

(CONTINUED FROM PAGE 224)

The device is equipped with a claw which is inserted under the rim of the hub-cap, leverage being provided by a tool foot which is placed below the center of the cap. As the tool foot has a rubber boot, it cannot scratch or mar the hub-cap finish in any way. Heavy rubber grip makes handling easy.

Use Free Postcard For More Details.

### P124. Flywheel Turner

The illustration shows the new Slick flywheel turner in action. Produced by Minnesota Automotive, Inc., Minneapolis, the



device should prove a handy asset for any tool kit, as it permits one hand turning of flywheel in connection with all clutch or engine jobs. List price: \$3.50.

Use Free Postcard For More Details.

### P125. Connector Kit

A new "Hylug" connector kit, just announced by Burndy Eng. Co., Inc., New York, contains everything necessary for making small-wire solderless electrical connections. It contains 325 assorted connectors for conductors No. 20 through No. 10 wire; as well as a tool for installing the

(TURN TO PAGE 228, PLEASE)

## ● WHAT IS IT?

ANSWER... (To Question on P. 224)

By hijackers. Babaco is a kind of super burglar alarm. The alarm is hidden under the hood and is connected electrically to the locked doors. The driver knows how the alarm works, but anybody else tampering with the truck will set off a siren that can be heard as far as five miles away.

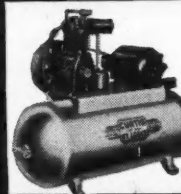
(Another Quiz Cartoon on P. 224)

MORE POWER  
ON THE  
**UPGRADES**  
MEANS  
FASTER SCHEDULES

**HALL-SCOTT**  
"400" ENGINE

Hall-Scott Motor Car Company  
Berkeley 2, California  
Division of ACF-Brill Motors Company

Is it *Air* YOU WANT?



—then write for  
**BULLETIN CAS-2**  
illustrating and  
describing Curtis  
Air Compressors

...also ask for FREE Curtis  
Maintenance Check Chart.

**CURTIS PNEUMATIC MACHINERY DIVISION**

of Curtis Manufacturing Company

1970 Kienlen Avenue • St. Louis 20, Missouri

**DECALS**  
for FLEET MARKING

Costs less than hand lettering. Does not tie up equipment.

Quantities—50 pieces or more any size.

Can reproduce any art work.

Prompt Delivery

**EXCELLO SPECIALTY CO.**  
4101 East 100 St. Cleveland 5, Ohio

**Tire Tools**  
FOR TIRES AND TUBES

Tire Demounters  
Tire and Tool Branders  
Tire Spreaders. Tube Vulcanizers  
Everything for Tire Service

Write for  
FREE CATALOG

KEEL & CO., Inc., Phila. 44, Pa.

**KEEL & CO.**

DAYTON Spoke Type Steel  
**WHEELS**  
**AIR-COOL**  
BRAKE DRUMS AND TIRES  
FOR TRUCKS, TRAILERS AND BUSES.  
THE DAYTON STEEL FOUNDRY CO.  
DAYTON, OHIO



**Heil Hydraulic Dump Units are  
*mounted above  
the truck frame***



- They don't interfere with other parts of the truck
- ... so • They are easier and more economical to install
- They are adaptable to any truck chassis

You give your profits a lift, when you use fast-dumping Heil Hydraulic Dump Units. They raise 24-ton loads to a 50° angle in 10 to 15 seconds. This dumping power and speed means more loads per truck and lower costs per yard.

Heil has made it easy for you to use these famous, fast-acting Dump Units—they are designed so that they are mounted above the frame. Thanks to this method of mounting, you can adapt these units to any truck chassis. Furthermore, you can shift them, if so desired, to compensate for odd wheel

bases, or to change the load on the rear axle to gain better traction during winter operation. This can be done easily and economically, without altering the chassis in any way. All the working parts are above the level of the frame. They do not interfere with any moving part of the truck. This feature is a great advantage, too, because it saves you time and money on truck maintenance.

Call on your Heil distributor and ask him to demonstrate the smooth, efficient speed of Heil Hydraulic Dumping Units. Look closely at the Heil Bodies. You won't see stronger, better-built jobs any place. Write for latest literature.



**THE HEIL CO.**

GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

WH-124

JANUARY, 1947

Use postage-paid card inserted at page 57 for free information on advertised products

227



**Unless it can "roll"—  
It's Not a Safety Tank!**

**AMERICAN SAFETY TANK CO.  
KANSAS CITY, MO.**

**HEAVY DUTY MOTOR TRUCKS  
AND  
GASOLINE ELECTRIC  
GENERATING SETS  
DUPLEX TRUCK COMPANY  
Lansing, Michigan**

**Cal-Van  
GARAGE TOOLS**

GEAR PULLER   CARBON SCRAPER   RING COMPRESSOR  
2nd 3 FINGER TYPE   LIGHT BUSH PILES   CREEPER CASTERS  
WRITE FOR CATALOG   NO. 10 TIMING GEAR PULLER   GARAGE TOOLS

**Cal-Van**  
MACHINE PRODUCTS, INC.  
JACKSON, MICHIGAN, U. S. A.

**DE VILBISS**

Spray-Painting Equipment — Spray Booths — Canopy Exhaust Systems — Exhaust Fans — Air Compressors — Hose and Hose Connections — Oil Guns  
Distributors or factory sales and service representatives everywhere  
**THE DEVILBISS COMPANY**  
Toledo 1, Ohio

KEEP OIL CLEAN WITH  
**PUROLATOR**  
THE OIL FILTER

**PUROLATOR PRODUCTS, INC.**  
Newark 2, N. J.  
Founder and leader of the oil filter industry

## New Products

(CONTINUED FROM PAGE 226)

connectors. Connectors are of pure-copper, one-piece construction, with no extra parts



which might loosen and cause increased resistance.

Use Free Postcard For More Details.

### P126. Reflector Flares

An emergency flare featuring unusual reflector lenses molded from red Plexiglas, has been announced by the Grote Mfg. Co.,

(TURN TO PAGE 230, PLEASE)

**WHICH IS IT?**



IF YOU HAD TO HAUL A LOAD OF VINEGAR, YOU WOULD DO BEST TO USE A TANK MADE OF ...

- ☐ STAINLESS STEEL   ☐ ZINC WOOD  
☐ COPPER

Answer on P. 230

**FRINK**  
**JNO FLOWS**  
REG. U. S. PAT. OFF.

Both "V" TYPE and  
**ONE WAY BLADE TYPE**  
hand or power hydraulic control  
FOR ALL MOTOR TRUCKS  
FROM 1½ to 10 TONS

Write for catalog 32AC and 32BC with discount to truck dealers.  
CARL M. FRINK, Mfr., CLAYTON, 1900 N. E. T.  
DAVENPORT-BESLER CORP., DAVENPORT, IOWA  
FRINK SHO-FLOWS OF CAN. Ltd., TORONTO, ONT.

Timken Bearings are the first choice of engineers and fleet operators everywhere because of their unusual efficiency and outstanding performance. Be sure the trade-mark "TIMKEN" is on every bearing you buy!



**THE TIMKEN ROLLER BEARING COMPANY**  
CANTON 6, OHIO

**CLEANER OIL**

**MEANS**

- Longer Engine Life
- Lower Oil Expense

Write for Bulletin No. 837  
**MICHIANA PRODUCTS CORP.**  
Michigan City, Indiana

**MICHIANA  
OIL FILTERS**

**Permalux**  
FINER DECALCOMANIA

FIRST IN { APPEARANCE  
ECONOMY  
DURABILITY

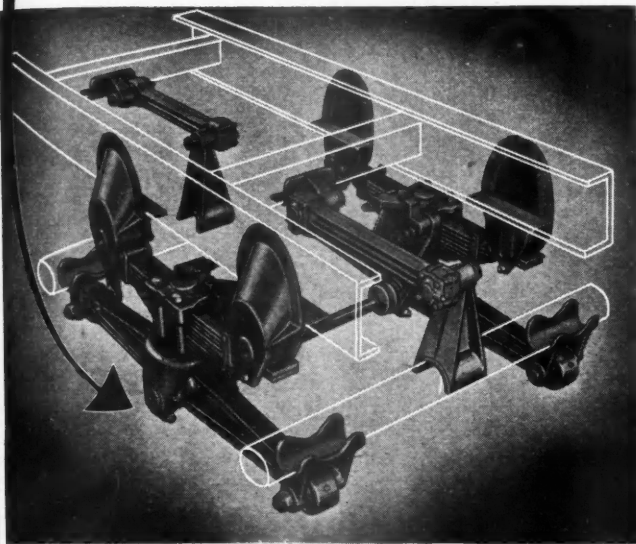
Made With DuPont "DULUX"  
Write Today for details

**THE PERMALUX COMPANY**  
500 Rathbone Ave. • Aurora, Ill.

**THE COMPLETE LINE**  
that  
Completely Satisfies  
Since 1906  
The  
**Fitzgerald Mfg. Co.**  
Torrington, Connecticut

**Fitzgerald**  
GASKETS

**the SECRET**  
**of successful**  
**tandem suspension**  
**lies below the springs**



• Hendrickson design combines equalizer beam construction and large anti-friction ball and socket joints to reduce each bump 50% and provide maximum flex. Axles are always parallel with fixed centers between them.

These features absorb the shocks of road irregularities before they reach the springs—which are free to perform only their normal function. This assures the smooth, level ride which means more profit to you. Full details upon request.

**HENDRICKSON MOTOR  
 TRUCK COMPANY**  
 Webash Avenue at 36th Street  
 CHICAGO 15, ILLINOIS

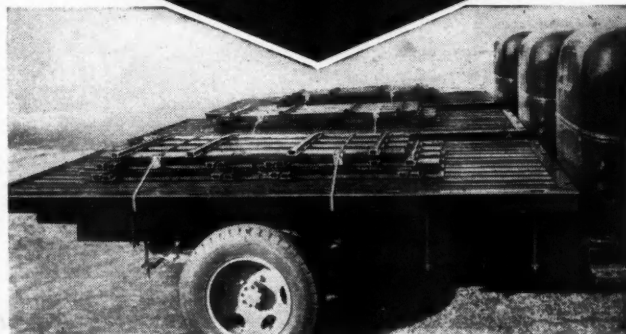


*"Follow the Leader"*

**USED THE WORLD OVER**



**BEST**  
 IS THE  
 WORD FOR  
**PERFECTION**  
 BODY *and* HOIST  
**SERVICE**



Write for name of nearest Perfection Distributor  
**THE PERFECTION STEEL BODY COMPANY**  
 GALION, OHIO

**PERFECTION**  
 STAKE and DUMP BODIES  
 HYDRAULIC HOISTS



**FOR ANY TRUCK**  
 STANDARD or SPECIAL UNITS  
 IN ALL SIZES • FOR ANY USE

SELF-CLOSING MONKEY LINK



Trade Mark Reg. U. S. Pat. Office

## MONKEY LINKS

Fit all types of Tire Chains.

Made in 5 sizes.

Order them today.

**FLOWER CITY SPECIALTY CO.**

Rochester, N. Y.

## DIRECT-FIRED HEATERS by

for GARAGES  
TERMINALS  
WAREHOUSES

HEATER DEPT.  
**DRAVO CORP.**  
PITTSBURGH 22, PA.

Send for Bulletin AD516



## V.E.P. OIL

Makes engines last 50% longer than they would with ordinary oil. Scientifically proved . . . 10 years in all types of fleets.

**THE OHIO OIL COMPANY**  
Findlay, Ohio

Producers of Petroleum since 1887

## SPINNING POWER

a Companion Product of Full-Spark Plugs  
**GLOBE-UNION INC.**  
MILWAUKEE 1, WIS.



## KINNEAR ROLLING DOORS



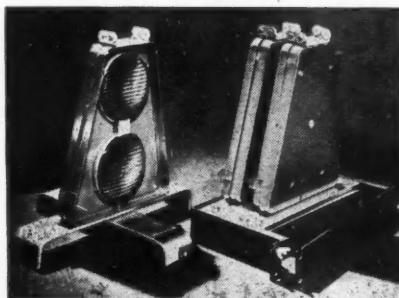
For truck bodies as well as buildings. Rugged, dependable. Steel slat curtain coils up quickly, out of the way. Built any size. Motor operation, if desired. Write for details.

**The Kinnear Mfg. Co.**  
2100-20 Fields Ave.  
Columbus 16, Ohio

## New Products

(CONTINUED FROM PAGE 228)

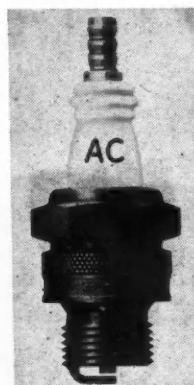
Bellevue, Ky. Each flare has a set of swivel type legs which can be quickly adjusted for mounting in the road and which also



permit compact arrangement in the carrier. The new flares meet all ICC regulations and are sold through automotive jobbers.

Use Free Postcard For More Details.

### P127. Portable Lighting Unit



AC Spark Plug Div. of General Motors is in production of a line of ceramic insulator spark plugs for commercial vehicles. These spark plugs have a wider heat range in each thread size and accommodate a wider range of engine operating conditions. They are said to give better gas economy, idle better, and afford longer mileage and better starting.

Use Free Postcard For More Details.

END

(Please resume your reading on P. 59)

### ● WHICH IS IT?

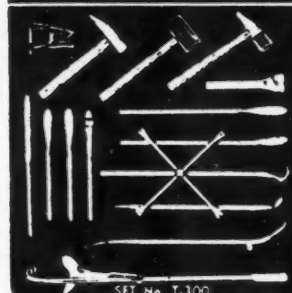
ANSWER . . . (To Question on P. 228)

Wood. Vinegar, being an acid, would eat through metal. Besides, wood is good for vinegar. Glass-lined tanks could be used.

(Another Quiz Cartoon on P. 232)

## KEN TIRE TOOLS

REG. U. S. PAT. OFF.



LEAD THE FIELD • ADVANCED DESIGN • QUALITY UNSURPASSED • SEE YOUR LOCAL JOBBY OR WRITE FOR LITERATURE • **KEN TOOL MFG. CO.** • AKRON 5, OHIO

SET No. T-100

Order Monday — Get It Friday!

**HANDEE** All Steel Trucks with extra wide nose and 13 ft. web strap, for use as



**REFRIGERATOR and Appliance TRUCK \$19.95**

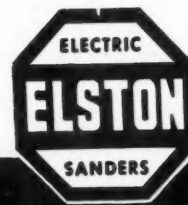
Rubber Tires; 900 lb. Cap.; Height 44"; 5 x 2" wheels; 1" tube steel frame; roller bearings; easy rolling. For medium size appliances and refrigerators and for all general purposes. Not padded. Shipped same day order received. Return express collect if not highly useful to you. 1% 10 days. Order from

**HANDEES CO., Dept CC-1**  
Bloomington, Illinois

When the Motor is Down  
Build it Up with . . .

*Allied*  
**MOTOR PARTS**

**ALLIED MOTOR PARTS CO.**  
DETROIT 1, MICHIGAN



**HIGHWAY SAFETY APPLIANCES INC.**  
1381 MARSHALL AVE.  
ST. PAUL 4, MINN.

**UNITS AVAILABLE**

**GRICO**  
**2-AXLE DRIVE**  
19842 W. Eight Mile Rd.  
Detroit 19, Michigan



# Underfoot Safety All Day the Low-Cost Way

**H**ERE'S just what the doctor ordered for your clean-up gang: Oakite Composition No. 71—a granular-absorbent material deliberately designed to soak up water, oil, grease and other deposits . . . provide clean, safe-to-work-on floors.

## Safety First with Seventy One!

All you have to do is spread Oakite Composition No. 71 around pits, pumps, grease racks, work benches—wherever there's a slippery spot. Thirsty particles go into action quickly . . . drink up every trace of oil, grease and water . . . lay a skid-proof carpet of safety underfoot. Then after Oakite Composition No. 71 has done its work, simply sweep away. Easy as that!

## In-Garage Help FREE

'Phone your nearby Oakite Technical Service Representative for further details on de-hazarding floors with Oakite Composition No. 71. He'll show you the effective, low-cost Oakite cleaning technique right in your garage or service shop. If you prefer, send for helpful Oakite Automotive Cleaning Booklet. Both Oakite Service and Literature—yours for the asking!

OAKITE PRODUCTS, INC., 26D Thames St., NEW YORK 6, N. Y.  
Technical Representatives in Principal Cities of U. S. & Canada

# OAKITE

REG. U. S. PAT. OFF.

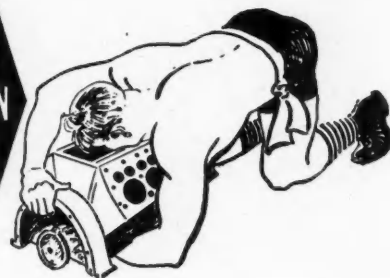
**Specialized Industrial Cleaning**  
MATERIALS • METHODS • SERVICE

JANUARY, 1947

Use postage-paid card inserted at page 57 for free information on advertised products

(Advertisement)

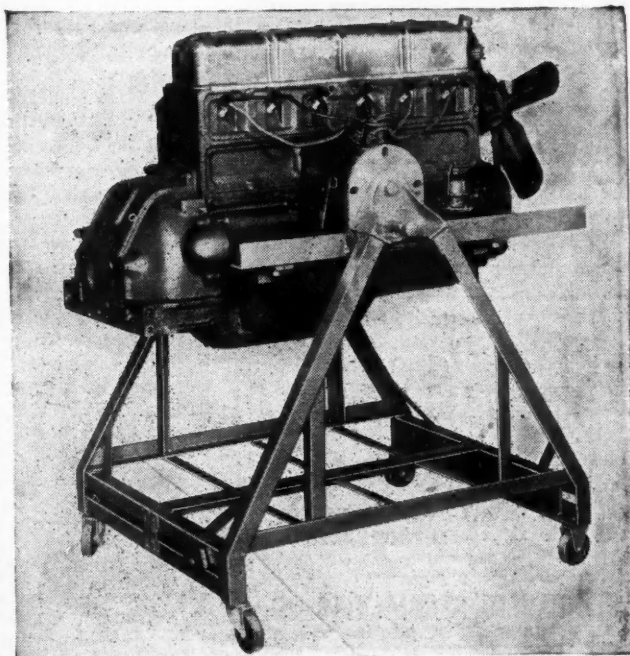
**YOU CAN'T WIN  
WRESTLING AN  
ENGINE BLOCK!**



**BUT—You can Win with This**

## New Universal Engine Overhaul Stand . . . Performs Every Operation Without Removing Block from Stand

This Clayborne Universal Model 201 Engine Overhaul Stand makes possible production line efficiency in every shop, no matter how small . . . increases production and lowers costs on every operation. Eliminates all handling of motor block during rebuilding. Entire block can be revolved for complete accessibility at all times for grinding seats, cutting valve clearance, etc. All parts can be replaced on motor ready to return to the chassis. Sturdily constructed. Completely mobile. Safe and easy to operate. Block may be steam cleaned on stand.



*Chevrolet Engine mounted on Clayborne New Style Universal Stand Model 201.*

The Clayborne Universal Model 201 Engine Overhaul Stand handles all in-line automotive engines to approximately 600 lbs. This stand readily handles the complete engine including oil pan, clutch housing and accessories. The special quick mounting clamps which grip engine pan rails are a special feature of this highly developed stand.

**SEE YOUR JOBBER OR WRITE TO**

**CLAYBORNE MANUFACTURING CO.**  
209 S. LA SALLE ST., CHICAGO 4, ILL.



Truck Mounting of Snyder Saddle Tank

## SAFETY SNYDER TANKS

Most Popular Safety Equipment in The Trucking Industry

### Some Reasons Why!

1. 100% lapwelded construction.
2. Uniform strength throughout.
3. Equipped with Flame Guard Safety Valve. (Trade Mark No. 409422.)
4. New Fusible Filler Caps.
5. Slip Proof Deck Plate.
6. Designed to fold with a crash.
7. Approved by the Underwriters Laboratories, Inc.

Patent Numbers 2181772 - 2275067 - 2289168. Others pending. Also foreign patents.

When You Buy a Tank Buy "Snyder." For Catalog and Address of Your Nearest Distributor, Write:

## SNYDER TANK CORPORATION

P. O. Box 14, Buffalo 5, N. Y.  
SNYDER TANK CORPORATION P. O. Box 2390, Birmingham, Ala.

## PLASTIC TIRE REPAIR FILM

A new type of non-porous plastic film to be used as a backing for tire and tube repair materials has been developed by United States Rubber Co. Known as "CelUSeal," the backing consists of two plies of glossy material, which is red in color and dirt-resistant. An embossed diamond design maintains a more tacky surface and provides channels to allow the escape of trapped air during its application.

Keep your  
trucks rolling with  
**Exide**  
LONG LIFE BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY  
Philadelphia 32

Exide Batteries of Canada, Limited, Toronto

**Stop** LOCKING AND  
SKIDDING FRONT WHEELS

Install a  
**HYSPECO**  
HYDRAULIC PRESSURE  
LIMITING VALVE

IN THE FRONT WHEEL BRAKE LINE OF  
YOUR POWER BRAKE INSTALLATION JOB

**HYDRAULIC SPECIALTIES CO.**  
27 MECHANIC ST. - BUFFALO 2, N. Y.

YOU MAKE  
MORE  
MONEY  
on  
**BLUE CROWN**  
**HUSKY**  
AMERICA'S  
FINEST SPARK PLUGS

AND YOU  
SELL THE  
BEST

## Washington Runaround

(CONTINUED FROM PAGE 78)

### Trailer Production High

Despite earlier predictions to the contrary, the truck-trailer industry attained a new monthly record in October in turning out 8,731 units. During this month, the industry shipped 8,374 trailers resulting in the addition of 357 units to inventory.

Production of trailers for the first 10 months of 1946 totalled 60,548 units, making it quite evident that total production for the year will exceed the industry's goal of 60,000 by more than 10,000 units.

### Rail Increase to Aid Truckers

Unlike the railroad rate increase of 17.6 per cent, motor freight rates have been and will continue to be raised on a regional basis. In the aggregate, increases in truck rates are not expected to be as high as those granted the railroads. Increases in railroad l.c.l. rates will benefit truckers more than any other portion of the ICC's action. Except in this instance, the competitive position of the rail and motor carriers is not expected to change materially.

END

(Please resume your reading on P. 86)

**WHO IS HE?**

THE FIREMAN WHO STEERS THE  
REAR WHEELS ON A TRACTOR-TYPE  
HOOK-AND-LADDER IS KNOWN AS THE...

☐ TILLERMAN ☐ TAILSPINNER  
☐ END MAN ☐ BACK SEAT DRIVER

Answer on P. 234

## ZINC YELLOW RUST INHIBITOR

Seven states—Alabama, Iowa, Kentucky, Massachusetts, Michigan, Minnesota, and Missouri—are using a priming paint on highway signs containing an average of 27 per cent zinc yellow pigment for protection against rust.

In releasing this information, DuPont Co. chemists pointed out that very successful use of this product was made by the army and the navy under wartime conditions.

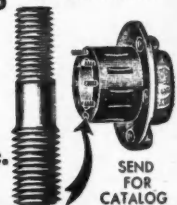
## OVERSIZE

REAR WHEEL STUDS for all Trucks

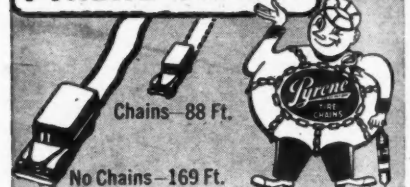
Order from Your Jobber



**CHAMP-ITEMS, Inc.**  
6191 Maple Ave.  
St. Louis 14, Mo.



FOR QUICKER STOPS  
ON SLIPPERY ROADS  
USE  
**PYRENE CHAINS**



**DETREX CORPORATION**

Vapor Degreasing Equipment

Solvents • Alkalis • Emulsions

Metal Parts Washers

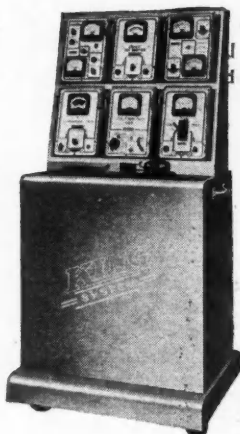
**DETROIT, MICHIGAN**

★ ALL SHOPS can use

# The "KING" UNIT TESTER

for Bench or Road Tests

The "KING" G-100 Unit Tester is a universal unit in that it can be used by all repair shops large or small, by fleet owners and gas stations—for bench or road tests. The following units are shown—(1) Tachometer and Cam Angle Tester (2) Exhaust Gas Analyzer (3) Generator Voltage Regulator Tester (4) Condenser Tester (5) Coil Ignition Tester (6) Spark Plug Tester (7) Vacuum and Fuel Pump Gauge (shown on shelf). Units may be purchased separately. The "KING" Unit Tester can be used to advantage in any repair shop.



Ask Your Jobber or Write Us

**The ELECTRIC HEAT CONTROL Co.**

9127 INMAN AVENUE • CLEVELAND 5, OHIO

GOOD "KING" PRODUCTS SINCE 1914

**DOES YOUR COOLING  
SYSTEM LEAK?**



**Best For Cracked Blocks, too!  
DOES THE JOB OR YOUR MONEY BACK**

When leaks develop in Cooling Systems, remember Moguloid! It's the amazing colloidal compounded of chrome and copper flour that cures block cracks and cooling system leaks fast with a positive actual metallic bond that will last a lifetime. For guaranteed results, be sure that you get Moguloid.



Get Your Moguloid Now!

**MOGULOID COMPANY OF AMERICA**

Division of Metallizing Company of America

1330 WEST CONGRESS STREET, CHICAGO 7

*Got a match, Mister?  
We'll give you odds  
You can't make this BLAZE!*



Better not take us up on that—you can take our word for it that FLAMEFOIL Canvas just can't blaze. This canvas is protected by a patented\* flame-proof finish that penetrates every fibre. A spark, a cigarette butt, even a lighted match, can do no more than char this canvas at the immediate point of contact. And right there the fire stops! The surrounding canvas will not ignite, cannot blaze—the fire-quenching FLAMEFOIL finish takes care of that!

FLAMEFOIL CANVAS has 3 other desirable characteristics, too: (1) It is water-resistant; (2) It withstands extremes of weather better and longer than untreated canvas; (3) It resists the formation of mildew.

NOTE: To give untreated canvas FLAMEFOIL'S 4-Point Protection, apply FLAMECOTE Canvas Finish. Available in 10 attractive colors.

## The Protection Lasts

FLAMEFOIL's 4-Point Protection is long-lasting. Every single fibre of this canvas is thoroughly impregnated—and neither rain, snow, nor blistering sun will remove the protective properties.

OTHER FLAMEFOIL PRODUCTS, which will soon be available, include: Flamefoil FABRIX, a line of flame-proof light-weight fabrics for use in drapes, furniture covers, work clothes, etc.; and Flamefoil HYDURA, a line of flame-proof artificial leathers in a wide range of attractive grains and colors.

### Resists



... WATER



... WEATHER



... MILDEW, TOO

Ask your canvas goods dealer about FLAMEFOIL CANVAS. If his stock is temporarily short, write to us.

\* Manufactured under Patents No. 2,299,612 and 2,044,176.  
Other Patents Pending.

**PHILADELPHIA TEXTILE FINISHERS, Inc.**

NORRISTOWN, PA.

W. L. BARRELL CO., NEW YORK  
SALES AGENTS FOR FLAMEFOIL CANVAS



**Wohlert** LANSING  
CORPORATION 5  
MICHIGAN

## TIRES

MIRRORS • REFLECTORS  
 LAMPS • MIRRORS  
 REFLECTORS • LAMPS  
 MIRRORS • REFLECTORS  
 REFLECTORS • MIRRORS  
 LAMPS • MIRRORS  
 REFLECTORS • LAMPS  
 MIRRORS • REFLECTORS  
 LAMPS • MIRRORS

**IT'S SAFER TO SEE WITH**

**YANKEE**

YANKEE METAL PROD., CORP.  
 NORWALK, CONN.

**AUTOPULSE CORP., DETROIT**



## Classified Advertisement

**Wanted—Fleet supervisor for 25 beverage trucks. Must be man with good mechanical experience and capable of supervising repairs and lining out work. Must also be familiar with operating practices and records. Prefer man who was previously assistant to supervisor or shop foreman. Give complete resume of experience and salary desired. Enclose recent photo. Box 10, c/o Commercial Car Journal.**

## Reader Digest

(CONTINUED FROM PAGE 34)

gotten, easily overlooked and can cost the company a lot of lost rubber. The only way you can tell what is going on in this regard is to keep a record. In 1945 there was a total of 8.5 per cent of our tires with chargeable service items. We've almost eliminated trouble in this classification. The record shows we've dropped this item to 0.6 per cent and the goal is 3 per cent.

How these results were achieved is explained on **Page 40**.

## 10-Point PM

by JACK C. AKERS  
Pierce Auto Freight Lines

**R**OAD failures are a constant bugaboo of the average motor freight line because they cause a loss of valuable time and revenue that can not be recovered.

When I went to work for our company 12 years ago, I made a study of the operation, extending over a period of about six years, to see if I could improve it so that road failures and other evils could be prevented. In 1940, we set up our present PM system which has saved us approximately 30 per cent in time and money, and made it possible for our big fleet to lose only two work days where it formerly lost from 12 to 15.

According to our present preventive maintenance schedule, we check our trucks at the completion of every trip, and find that it takes approximately one hour per unit.

We employ several forms of control, such as blackboards, trip reports and others. However, the basic factor is our PM program, one of the most complete systems on the Pacific Coast. It is organized into 10 divisions, listed under the various letters of the alphabet from A through J. (See Page 68.)

**END**

**Please resume your reading on P. 35)**

## CALIF. TAX PROPOSALS

Proposals for a 1 to 1½-cent gasoline tax increase, heavy taxes on diesel fuel and a graduated mileage tax on commercial vehicles are contained in a 123-page report submitted recently to California's Collier fact-finding legislative committee by Bertram H. Lindman, engineer-economist. As may be surmised from the proposals, a considerable proportion of the report is devoted to the tenet that heavy vehicles do not now pay their proportionate way.

## ● WHO IS HE?

**ANSWER . . . (To Question on P. 232)**

**The tillerman. His function is similar to that of the steersman on a boat who operates the rudder by means of a tiller.**

**Stop'em  
SAFELY**  
with  
**Gatke**  
CUSTOM-BILT

**BRAKE LININGS**  
BLOCKS SETS ROLLS SHEETS

**GATKE CORPORATION**  
228 N. La Salle St. Chicago 1, Ill.

# Available Trucks

**1½ TO 20 TONS**  
**TRUCKS • TRACTORS**  
**TRAILERS • BUSES**  
(SINCE 1910)  
**TELEPHONE—BRUNSWICK 1100**  
**AVAILABLE TRUCK CO.**  
**2501 ELSTON AVE.—CHICAGO 47, ILL.**

*Ready for Delivery*

## EVANS TRUCK-CAB HEATERS

**...with oversize core  
and superior defroster**

**See your local distributor or write direct to:**

**THERMO-AIRE DIVISION**

**EVANS PRODUCTS CO.**  
PLYMOUTH, MICHIGAN



*Check the wire on every job*

Wiry Joe

## AUTOMOTIVE CABLE

manufactured by  
**THE CRESCENT COMPANY, Inc.**  
Pawtucket, Rhode Island

# BUY BONDS

# QUICK

## WARM-UP



Reduces Crank-Case Dilution  
Consumes Less Gas  
Saves Engine Wear

As Part of Every Motor Tune-Up Job  
Replace with a

# DOLE

*\* Adjustable  
Thermostat*

THE DOLE VALVE COMPANY • 1901-1941 Carroll Ave., Chicago 12, Illinois  
Representatives in Principal Cities

*\*Why Adjustable?* Fulltest thermostat efficiency is assured by settings for winter with permanent antifreeze, winter with alcohol and summer where nights are cool.

## TRANSPORTATION SERVICE IS TOUGH and so are JONES TACHOMETERS

When your engines are equipped with JONES TACHOMETERS, you are sure of accurate speed measurements regardless of vibration, hard usage, or other conditions which cause the breakdown or inaccuracies of other types of instruments. There's no delicate mechanism to cause inaccurate readings on the dial. The centrifugal action of a fly ball governor develops a force, equivalent to seven or eight pounds, to give positive movement to the pointer. Tested and approved under applicable Government specifications, you'll find them standing the gaff everywhere. That is why whatever your operating conditions, you'll find the JONES TACHOMETER has the "staying power" to meet all difficult service requirements.



Type 1081 JONES  
TACHOMETER  
with range indicated.

Write for Catalog 146

# JONES MOTROLA CORP.

438 FAIRFIELD AVENUE STAMFORD, CONN.

# DEPENDABLE POWER!



**BOWERS**  
*"Double Duty"*  
TRUCK & BUS BATTERIES

BOWERS BATTERY & SPARK PLUG CO. INC., • READING, PA.

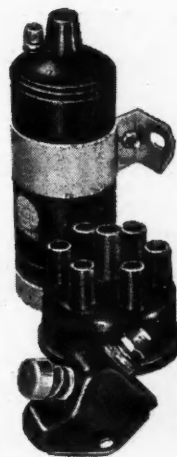
## Engineered to be... TOUGH

Matching the toughness of any heavy duty engine, Niehoff Ignition Replacement Parts will stand up under the most rugged day by day pounding. Every part is manufactured from the cream of raw materials . . . is processed and assembled under the eyes of old timers in the precision business . . . and then has to pass an honest-to-goodness inspection or actual test. For ignition parts "Engineered To Be Tough"—get Niehoff. There's a Niehoff jobber near you, call him in today.

**C. E. NIEHOFF & CO.**

4925 Lawrence Ave., Chicago 30, Ill.

BRANCHES: 1342 S. Flower St., Los Angeles 15, Calif.  
250 W. 54th St., New York 19, N. Y.



# NIEHOFF

APPROVED QUALITY PRODUCTS

## BISHMAN E-Z-OFF RIM PROTECTIVE COMPOUND

Prevents RUST and CORROSION

Keep slush and rain out of your tire at rim. Just spread E-Z-OFF Compound on rims before mounting tires. It seals against water seepage—protects tire, tube, flap and rim. Eliminates sticking of tire to rim. Absolutely harmless to tire. No creeping of tire on rim. On badly rusted rims, it loosens rust scales for easy removal. Sold on MONEY BACK GUARANTEE of satisfaction.



ASK YOUR JOBBER — or write us

**BISHMAN MFG. CO., Osseo 4, Minn**

## MAINTENANCE MEN WHO KNOW SPECIFY . . .

**Flare**  
BRAND

The Complete Line  
of **AUTOMOTIVE  
CHEMICALS**

There is a FLARE chemical for every automotive need. FLARE quality is unexcelled. Specify FLARE for added trouble-free mileage. Many FLARE chemicals packed in shop size containers for economical truck maintenance. Ask your supply house!

FOR CAR BEAUTY  
AND CARE USE  
**Flare**



ESTABLISHED 1920  
**THE BELL COMPANY, INC.**  
411-15 NO. WOLCOTT • CHICAGO 22, ILL.

**Sterling**

## MOTOR TRUCKS

Quality Built  
Since 1907

**HEAVY DUTY FOUR AND SIX WHEEL CHASSIS  
FOR ON OR OFF-THE-HIGHWAY OPERATIONS**

**GASOLINE AND DIESEL POWERED  
CHAIN DRIVE --- ENCLOSED DRIVE.**

**STERLING MOTORS CORPORATION**

MILWAUKEE 1, WISCONSIN  
Branches in Principal Cities



Dependable quality drive shaft assemblies for passenger cars, trucks and busses. Consult your local Almetal jobber for assistance on your Universal Joint problems.

**THE ALMETAL UNIVERSAL JOINT CO.**  
1555 EAST 55th STREET • CLEVELAND 3, OHIO

For **SAFETY**  
LIGHTING and  
EQUIPMENT

IT'S  
**DO-RAY**  
ALL THE  
WAY



**DO-RAY  
LAMP COMPANY**

1458 SO. MICHIGAN AVE. • CHICAGO

**Hygrade Line**  
AUTOMOTIVE  
PRODUCTS

## REPLACEMENT PARTS by **HYGRADE**



CARBURETOR AND FUEL PUMP  
PARTS IN CONTAIN-ALL KITS

SHOCK ABSORBER PARTS

SPEEDOMETER CABLE, CASING,

TIPS AND SHAFTING

FUEL LINES AND FITTINGS



HYGRADE PRODUCTS CO., INC. • LONG ISLAND CITY 1, N. Y.

THERE'S ONLY ONE

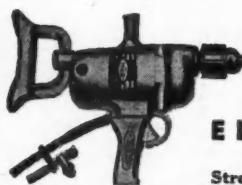


## BURN-OUT PROOF DIRECTIONAL SIGNAL SWITCH

In complete sets of Signal-Stats or as a replacement switch—ASK YOUR JOBBER

**SIGNAL-STAT CORPORATION**

1430 HERKIMER STREET BROOKLYN 33, N. Y.



The  
NEW **SIoux**  
HEAVY DUTY  
ELECTRIC DRILLS

Streamlined with a purpose. They're re-designed—shorter, more compact—for greater efficiency, better balance, easier handling and greater convenience in close quarters. All the tried and proven SIOUX developments that have made them outstanding for their endurance, have been retained. SIOUX Heavy Duty Drills include sizes and capacities to meet all needs. For the most efficient and economical method of handling any drill job, you need SIOUX Drills.



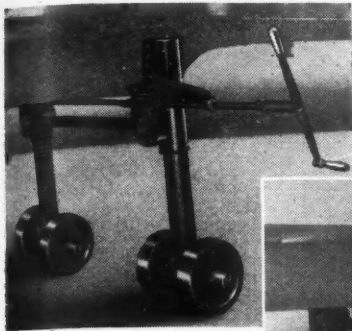
Authorized SIOUX Distributors Have Them

**ALBERTSON & CO., Inc.**

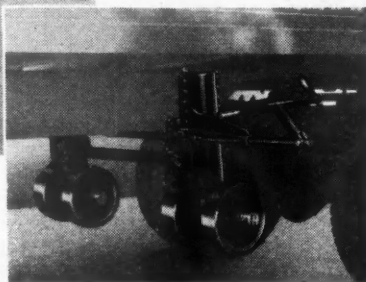
Sioux City, Iowa, U. S. A.

STANDARD THE WORLD OVER





# HOLLAND



## IMPROVED Vertical Lift LANDING GEAR

Load Lifting Power  
unequaled by any other  
type.

18" ground travel  
clearance — 9" more  
than others.

Safe—Simple—Durable  
Fast and Easy.

### The Nationally Known and Approved Standard

Features are engineered into the Holland V-400 Vertical Lift Landing Gear which make it the choice of those most experienced in truck and trailer operation. Its tremendous lifting power, with speed and ease, is matched by its great safety, simplicity, and durability. Made by the makers of the well known Holland Fifth Wheel and Holland pintle and couplers.

ENGINEERED BY

## HOLLAND HITCH COMPANY

HOLLAND, MICHIGAN, U. S. A.

## THE TOP SAFETY SIGNAL



## BUELL MFG. CO., CHICAGO 16

Warning Signals Since 1912

2988 COTTAGE GROVE AVENUE



*At your Jobber's*

### REMOVES-INSTALLS

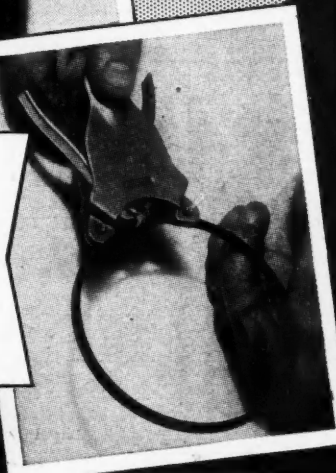
K-D 875 Piston Ringer removes and installs all makes, types and sizes of piston rings up to 4" diameter Handy, pocket size, strongly built. It makes another hard job easy.

### SAVES FINGERS SAVES RINGS

Mechanics like it, use it because it saves their fingers, doesn't twist or stretch rings. It's a K-D Hustler—found at Jobbers everywhere.

K-D MANUFACTURING CO.  
Lancaster, Pa., Hamilton, Ont.

*Write for description  
of complete line*



*Only a Leonard  
offers your Customers  
these 4 advantages*



- 1—AIR-COOLED—Heat Carryoff tube prevents overheating, greatly prolonging plug life.
- 2—SPARK GAP CONTROL—Original setting stays put indefinitely. Frequent re-gapping unnecessary.
- 3—WIDEST RANGE OF TYPES—Enables you to give your customer the right plug for his particular installation—passenger car, bus, truck, tractor or marine, insuring top engine performance.
- 4—CUSTOM BUILT—Two-piece simplified construction gives greater strength and wear-resistance under severest service conditions.

*See your jobber or write us for catalog.*

LEONARD SPARK PLUG CO., INC., Newark 4, N. J.

*Custom Built Yet they Cost no more*

## LEONARD SPARK PLUGS



For Faster and More Accurate  
**BATTERY TESTING**

## IMPERIAL "K"

No. 515-T

### BATTERY HYDROMETER

Has shatterproof glass jar. Gives highly accurate readings corrected for temperature. Simplifies testing—gives service instructions on barrel. Easy to read... handy to use... compact.

No. 515-T.  
Battery Hydrometer  
Order from Your Jobber

THE IMPERIAL BRASS MFG. CO., 1209 W. Harrison St., Chicago 7, Ill.

# AUSTIN

TRAILER EQUIPMENT COMPANY

## ENGINEERED TRUCK AND TRAILER PRODUCTS

MUSKEGON, MICHIGAN

"Tailor-Make"

Your Adjustment



Push it back or forth;  
up or down. Extension  
14" to 22".

*Hindview*

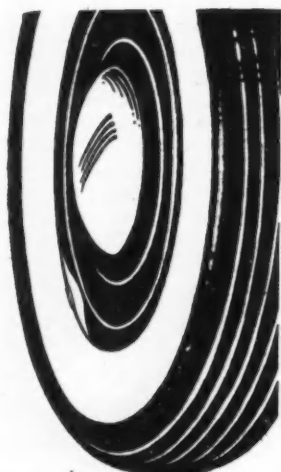
**Mirror**

Ball and socket joint has built-in  
spring tension.

Illustration shows  
one truck-model mirror  
at 3 angles, 3 lengths.

**WHITEHEAD**  
1485 W. Lafayette Blvd.

**STAMPING CO.**  
Detroit 16, Michigan



**SNUGL FAD-A-WAY**  
AUTOMOTIVE  
WHEEL BALANCING WEIGHTS  
TRUCKS • BUSES • PASS. CARS



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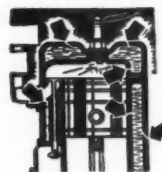
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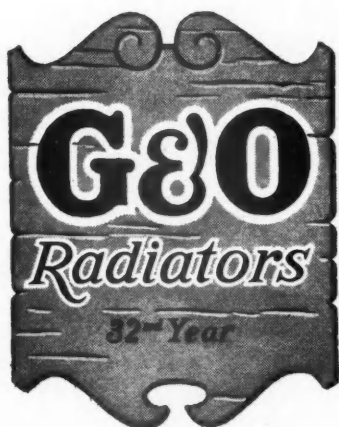
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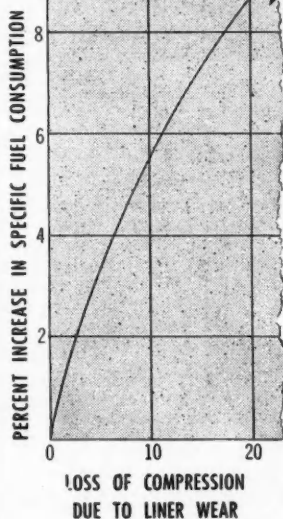
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|  |                 |
|--|-----------------|
| AC Spark Plug Div.....                                       | 141-163-175-184 |
| Airtex Automotive Div.....                                   | 20              |
| Albertson & Co., Inc.....                                    | 236             |
| Allied Equipment & Supply Co.....                            | 212             |
| Allied Motor Parts Co.....                                   | 230             |
| Alloy Steel Div.....   | 15              |
| Almetal Universal Joint Co., The..                           | 236             |
| Aluminum Co. of America...3rd Cover                          |                 |
| American Bosch Corp.....                                     | 196             |
| American Brake Shoe Co.....                                  | 149-209         |
| American Chain & Cable Co.....                               | 163             |
| American Hammered Piston Ring<br>Div., Koppers Co., Inc..... | 125             |
| American Safety Tank Co.....                                 | 228             |
| American Steel Foundries.....                                | 116             |
| Ansul Chemical Co. Fire Exting-<br>guisher Div.....          | 106             |
| Armstrong Rubber Co.....                                     | 234             |
| Arrow Safety Device Co.....                                  | 217             |
| Austin Trailer Equip. Co.....                                | 238             |
| Autocar Company.....   | 17              |
| Automotive & Aircraft Div., Amer.<br>Chain & Cable Co.....   | 168             |
| Autopulse Corp.....  | 234             |
| Available Truck Co.....                                      | 234             |

|  |         |
|--|---------|
| Bacharach Industrial Instrument<br>Co.....           | 239     |
| Bear Mfg. Co.....                                    | 109     |
| Bell Co., Inc., The.....                             | 236     |
| Bendix Aviation Corp.,<br>Zenith Carburetor Div..... | 172     |
| Bendix-Westinghouse Automotive<br>Air Brake Co.....  | 206     |
| Bishman Mfg. Co.....                                 | 236     |
| Black & Decker Mfg. Co.....                          | 183     |
| Blackhawk Mfg. Co.....                               | 18      |
| Blood Bros. Machine Co.....                          | 215     |
| Blue Crown Spark Plug Co.....                        | 232     |
| Bostrom Mfg. Co.....                                 | 177     |
| Bower Roller Bearing Co.....                         | 162     |
| Bowers Battery & Spark Plug<br>Mfg. Co., Inc.....    | 235     |
| Braden Winch Company.....                            | 137     |
| Budd Company, The.....                               | 150-151 |
| Buell Manufacturing Co.....                          | 237     |
| Bustin Iron Works, Inc.....                          | 190     |
| Butler Engineering Co.....                           | 153-154 |

|   |         |
|---|---------|
| Cal-Van Machine Products, Inc....                       | 228     |
| Carter Carburetor Corp.....                             | 147     |
| Casite Corp., The.....                                  | 97      |
| Champ-Items, Inc.....                                   | 232     |
| Champion Spark Plug Co.....                             | 9       |
| Chrysler Corporation (Parts Div.)..                     | 167     |
| Clark Equipment Co.....                                 | 119-120 |
| Classified Advertisement.....                           | 234     |
| Clawson & Bals, Inc.....                                | 129     |
| Clayborne Mfg. Co.....                                  | 231     |
| Columbus-McKinnon Chain Co....                          | 122     |
| Continental Motors Corp.....                            | 199     |
| Cooper Tire & Rubber Company..                          | 169     |
| Crescent Co., Inc.....                                  | 234     |
| Cummins Engine Co., Inc.....                            | 1       |
| Curtis Pneumatic Machinery Div.,<br>Curtis Mfg. Co..... | 226     |

|   |     |
|---|-----|
| Dayton Rubber Mfg. Co.....              | 189 |
| Dayton Steel Foundry Co., The..         | 226 |
| Detrex Corporation.....                 | 232 |
| De Vilbiss Company.....                 | 228 |
| Diamond T Motor Car Co.....             | 83  |
| Dodge Div. Chrysler Corp.,<br>2nd Cover |     |
| Dole Valve Co.....                      | 235 |
| Do-Ray Lamp Co.....                     | 236 |
| Dorsey Trailers.....                    | 204 |
| Dravo Corp.....                         | 230 |
| Duplex Truck Co.....                    | 228 |

|                                   |     |
|-----------------------------------|-----|
| Eaton Manufacturing Co.....       | 2   |
| Eberhard Mfg. Co.....             | 140 |
| Econite, Inc.....                 | 146 |
| Edison, Inc., Thos. A.....        | 26  |
| Eis Automotive Corp., The.....    | 222 |
| Electric Boat Co.....             | 221 |
| Electric Heat Control Co., The... | 233 |
| Electric Storage Battery Co., The | 232 |
| Evans Products Co.....            | 234 |
| Ex Cell O Specialty Co.....       | 226 |

|  |     |
|--|-----|
| FAB Mfg. Co.....                                 | 118 |
| Federal-Mogul Service.....                       | 81  |
| Federal Motor Truck Co.....                      | 101 |
| Fire Extinguisher Div. Ansul<br>Chemical Co..... | 106 |
| Fitzgerald Mfg. Co., The.....                    | 228 |
| Flare Laboratories.....                          | 236 |
| Flour City Brush Co.....                         | 241 |
| Flower City Specialty Co.....                    | 230 |
| Ford Motor Co.....                               | 143 |
| Four Wheel Drive Auto Co.,<br>Back Cover         |     |
| Fram Corporation.....                            | 185 |
| Freedom-Valvoline Oil Co.....                    | 77  |
| Frink, Mfr., Carl H.....                         | 228 |
| Fruehauf Trailer Co.....                         | 79  |
| Fuller Mfg. Co.....                              | 216 |

|                                 |     |
|---------------------------------|-----|
| G & O Mfg. Co., The.....        | 239 |
| Gar Wood Industries, Inc.....   | 201 |
| Gatke Corp.....                 | 234 |
| General-Detroit Corp., The..... | 188 |
| General Electric Co.....        | 219 |
| Globe-Union, Inc.....           | 230 |
| Goodrich Company, B. F.....     | 19  |
| Graco Two-Axle Drive Co.....    | 230 |
| Grizzly Mfg. Co.....            | 110 |
| Grote Mfg. Co., Inc.....        | 238 |
| Guide Lamp Div.....             | 214 |
| Gulf Oil Corp.....              | 123 |
| Gunite Foundries Corp.....      | 126 |

|                                   |     |
|-----------------------------------|-----|
| Hall Mfg. Co., The.....           | 132 |
| Hall-Scott Motor Car Div.....     | 226 |
| Handeas Co., The.....             | 230 |
| Hansen Mfg. Co., A. L.....        | 29  |
| Hart Pressed Steel Corp.....      | 142 |
| Hastings Mfg. Co.....             | 115 |
| Hell Company, The.....            | 227 |
| Hein-Werner Motor Parts Corp..    | 131 |
| Hendrickson Motor Truck Co.....   | 229 |
| Herbrand Corp., The.....          | 80  |
| Highway Safety Appliances, Inc... | 230 |
| Highway Trailer Co.....           | 107 |
| Holland Hitch Co.....             | 237 |
| Hollingshead Corp., R. M.....     | 191 |
| Hoof Products Co.....             | 108 |
| Hydraulic Specialties Co.....     | 232 |
| Hygrade Products Co., Inc.....    | 236 |

|                                   |     |
|-----------------------------------|-----|
| Imperial Brass Mfg. Co., The..... | 238 |
| Inland Rubber Corp.....           | 145 |
| International Chain & Mfg. Co.... | 215 |
| International Harvester Co.....   | 32  |

|   |     |
|---|-----|
| Jones-Motrola Corp.....                     | 235 |
| K-D Mfg. Co.....                            | 237 |
| Keel & Co., Inc.....                        | 226 |
| Kellogg Div. American Brake Shoe<br>Co..... | 209 |
| Kelly-Springfield Tire Co.....              | 23  |
| Ken Tool Mfg. Co.....                       | 230 |
| Kingham Trailer Co., Inc.....               | 187 |
| Kinnear Mfg. Co., The.....                  | 230 |

# Index to A

This Advertisers' Index is published of the advertising contract. Every rectly. No allowance will be made

|   |     |
|---|-----|
| Koppers Co., Inc., Amer. Ham-<br>mered P. R. Div..... | 125 |
| Krieger Steel Sections, Inc.....                      | 160 |

|                               |     |
|-------------------------------|-----|
| Lanagan & Hoke.....           | 156 |
| Lee Company, K. O.....        | 197 |
| Leece-Neville Co.....         | 66  |
| Leonard Spark Plug Co.....    | 237 |
| Lincoln Engineering Co.....   | 193 |
| Lindsay Corporation, The..... | 73  |
| Lipe-Rollway Corporation..... | 179 |
| Lusk Co., C. F.....           | 238 |

|   |     |
|---|-----|
| McCreary Tire & Rubber Co.....                          | 218 |
| McKay Company, The.....                                 | 114 |
| Mack Trucks, Inc.....                                   | 92  |
| Maremont Auto. Prod., Inc.....                          | 121 |
| Marmon-Herrington Co., Inc.....                         | 30  |
| Marquette Mfg. Co., Inc.....                            | 152 |
| Marvel-Schebler Carburetor Div..                        | 124 |
| Michiana Products Corp.....                             | 228 |
| Mid-Continent Petroleum Corp....                        | 198 |
| Midland Steel Products Co.....                          | 87  |
| Mid-Western Auto Parts.....                             | 238 |
| Miley Co., Inc., L. J.....                              | 239 |
| Milwaukee Dustless Brush Co....                         | 174 |
| Minnesota Automotive, Inc.....                          | 135 |
| Moguloid Co. of Amer.....                               | 233 |
| Mohawk Rubber Co.....                                   | 102 |
| Monmouth Prod. Co.....                                  | 157 |
| Monroe Auto Equipment Co.....                           | 186 |
| Moog Piston Ring Co., Div. Moog<br>Industries, Inc..... | 133 |

|                                 |         |
|---------------------------------|---------|
| National Auto. Parts Assn.....  | 138-139 |
| Neilson Chemical Co.....        | 238     |
| New Britain Machine Co.....     | 111     |
| New England Auto Prod. Corp.... | 103     |
| New York Air Brake Co., The.... | 195     |
| Niehoff & Co., C. E.....        | 235     |

|                               |     |
|-------------------------------|-----|
| Oakite Products, Inc.....     | 231 |
| Ohio Oil Co., The.....        | 230 |
| Ohio Piston Co., The.....     | 208 |
| Oshkosh Motor Truck, Inc..... | 21  |
| Owatonna Tool Co.....         | 134 |

|                                      |         |
|--------------------------------------|---------|
| Pacific Coast Brush Co.....          | 241     |
| Packard Electric Div.....            | 194     |
| Pedrick Piston Rings.....            | 14      |
| Peerless Chemical Co.....            | 239     |
| Perfect Circle Co., The.....         | 7       |
| Perfection Steel Body Co.....        | 229     |
| Permalux Company, The.....           | 228     |
| Permatex Co., Inc.....               | 3       |
| Philadelphia Textile Finishers, Inc. | 233     |
| Practical Products Co.....           | 130     |
| Prior Products, Inc.....             | 180-181 |
| Puritan Company, Inc.....            | 148     |
| Purolator Prod., Inc.....            | 228     |
| Pyrene Mfg. Co.....                  | 232     |

|                                    |     |
|------------------------------------|-----|
| Quaker State Oil Refining Corp.... | 127 |
|------------------------------------|-----|

# Advertisers

as a convenience, and not as part  
care will be taken to index cor-  
for errors or failure to insert

|  |     |
|--|-----|
| Ramsey Corporation .....                           | 8   |
| Raybestos Div. Raybestos-Man-<br>hattan, Inc. .... | 211 |
| Reo Motors, Inc. .... Front Cover-22-23            |     |
| Republic Steel Corp. ....                          | 15  |
| Roadmaster Products Co. ....                       | 16  |
| Rowland, Inc., William & Harvey                    | 104 |
| Ruger Equipment Co., Inc. ....                     | 88  |
| Russell Mfg. Co., The. ....                        | 158 |
| S K F Industries, Inc. ....                        | 84  |
| St. Paul Hydraulic Hoist Co. ....                  | 31  |
| Safety & Maintenance Co. ....                      | 128 |
| Scully Signal Co. ....                             | 224 |
| Sealed Power Corp. ....                            | 91  |
| Service Recorder Co., The. ....                    | 136 |
| Service Station Equipment Co. ....                 | 192 |

|                                      |     |
|--------------------------------------|-----|
| Shand & Jurs Co. ....                | 90  |
| Shell Oil Company, Inc. ....         | 105 |
| Shuler Axle Co., Inc. ....           | 95  |
| Siebring Mfg. Co. ....               | 67  |
| Si-En-Tif-Ik Products Co., Inc. .... | 85  |
| Signal-Stat Corp. ....               | 236 |
| Silent Hoist & Crane Co. ....        | 224 |
| Sinclair Refining Co. ....           | 117 |
| Snap-On Tools Corp. ....             | 226 |
| Snyder Tank Corporation. ....        | 232 |
| South Bend Lathe Wks. ....           | 82  |
| Spencer Thermostat Co. ....          | 225 |
| Spicer Mfg. Div. of Dana Corp. ....  | 173 |
| Standard Forge & Axle Co. ....       | 223 |
| Standard Oil Co. (Calif.) ....       | 203 |
| Standard Oil Co. (Indiana) ....      | 11  |
| Sterling Motors Corp. ....           | 236 |
| Studebaker Corp. ....                | 71  |

|                                |        |
|--------------------------------|--------|
| T. E. D. Corporation. ....     | 207    |
| Teleoptic Co., The. ....       | 144    |
| Texas Co., The. ....           | 4-5    |
| Textileather Corp. ....        | 178    |
| Thermoid Co. ....              | 226    |
| Thompson Products, Inc. ....   | 159    |
| Timken-Detroit Axle Co. ....   | 10     |
| Timken Roller Bearing Co. .... | 228    |
| Tobin-Arp Mfg. Co. ....        | 222    |
| Trailmobile Co., The. ....     | 6      |
| Trico Products Corp. ....      | 202    |
| Truckstell Co., The. ....      | 99-155 |
| Trucktor Corp., The. ....      | 176    |
| Turk Corp., C. K. ....         | 200    |

|                               |       |
|-------------------------------|-------|
| U. S. Rubber Co. ....         | 24-25 |
| Van Norman Company. ....      | 27    |
| Vickers, Inc. ....            | 89    |
| Victor Mfg. & Gasket Co. .... | 165   |

|  |         |
|--|---------|
| Wagner Electric Corp. ....                             | 161-182 |
| Walker Mfg. Co. of Wis. ....                           | 12-13   |
| Walter Motor Truck Co. ....                            | 242     |
| War Assets Administration. ....                        | 170     |
| Ward LaFrance Truck Div., Great<br>American, Inc. .... | 210     |
| Warner Electric Brake Mfg. Co. ....                    | 112-113 |
| Waukesha Motor Co. ....                                | 226     |
| Wausau Motor Parts Co. ....                            | 213     |
| Waverly Petroleum Products Co. ....                    | 128     |
| Wellman Co., S. K. ....                                | 226     |
| White Motor Co., The. ....                             | 65      |
| Whitehead Stamping Co. ....                            | 238     |
| Wilcox-Rich Div. ....                                  | 2       |
| Wilkening Mfg. Co. ....                                | 14      |
| Willard Storage Battery Co. ....                       | 171     |
| Williams & Co., J. H. ....                             | 205     |
| Wiry Joe ....  | 234     |
| Witteck Mfg. Co. ....                                  | 222     |
| Wohlert Corp. ....                                     | 234     |
| Wolf's Head Oil Refining Co., Inc. ....                | 166     |

|                               |     |
|-------------------------------|-----|
| Yankee Metal Prod. Corp. .... | 234 |
| Zehr Products Co. ....        | 226 |
| Zollner Machine Wks. ....     | 164 |



## A Clean Fleet is GOOD BUSINESS!

Clean trucks and buses are good advertising for the firm whose name they carry. Flour City brushes are the answer for a speedy, clean wash. The long handle and fountain head with tough, close-set bristles make it easy to reach all surfaces and remove the toughest dirt.

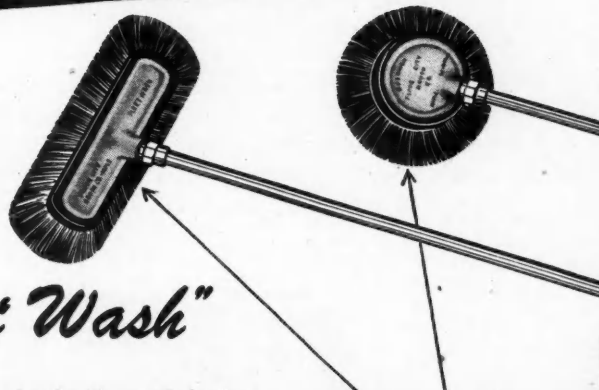
### "Bus Wash"

This round type brush is made in two grades, No. 650H with horsehair bristles—\$7.95. No. 650BM with imported pig bristles—\$12.75. Both brushes have round, cast aluminum head 5" in diameter, with 4' hollow seamless steel handle equipped with brass fittings.

### "Fleet Wash"

This is an oblong type brush with a cast aluminum head 2 1/2" wide by 10" long. The imported pig bristles 3 1/4" long, flare to a 12" cleaning surface. The 4' handle is hollow, seamless steel equipped with brass fittings. No. 366—\$14.75.

Our New Catalog Sheet Will Be Sent On Request

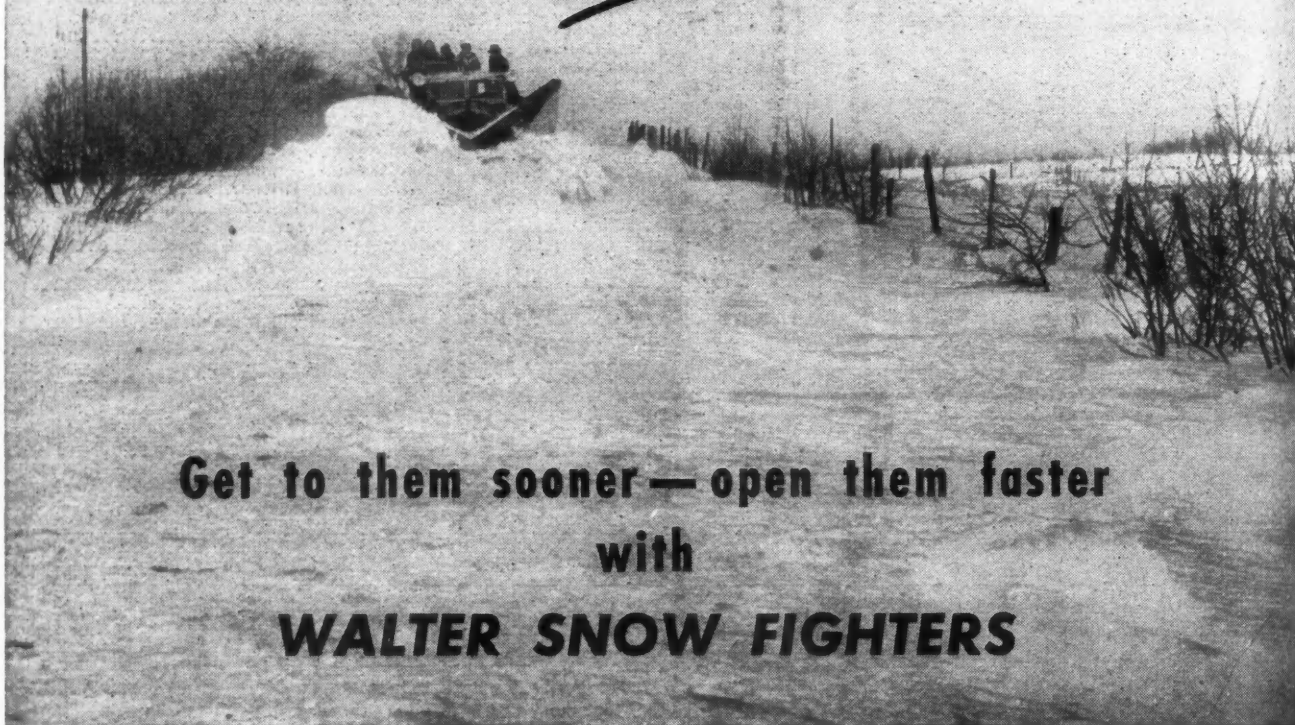


### Replaceable Head

No need to buy a whole new brush when the bristles wear out. The head is replaceable on an exchange basis at a fraction of the original cost.

**FLOUR CITY BRUSH CO. • MINNEAPOLIS 15, MINNESOTA**  
**PACIFIC COAST BRUSH CO. • LOS ANGELES 21, CALIFORNIA**

# Why must secondary roads be "Stepchildren"?



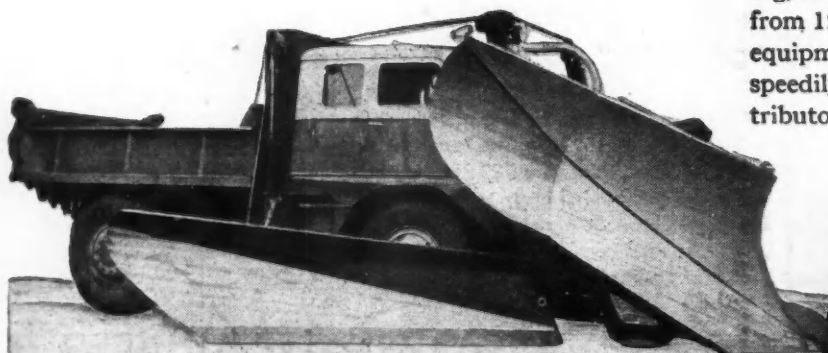
Get to them sooner—open them faster  
with  
**WALTER SNOW FIGHTERS**

**S**ECONDARY ROADS are often neglected because main highways tie up equipment too long. The delay makes snow conditions worse and imposes serious hardships on rural dwellers.

Here, again, highway departments equipped with Walter Snow Fighters enjoy a big advantage. Because these fast, powerful Walter units clear main highways much quicker (20-30 m.p.h.)—you get to secondary roads much sooner, be-

fore drifting, packing and freezing can complicate the job. No matter what conditions you find, Walter Snow Fighters will blast through in record time.

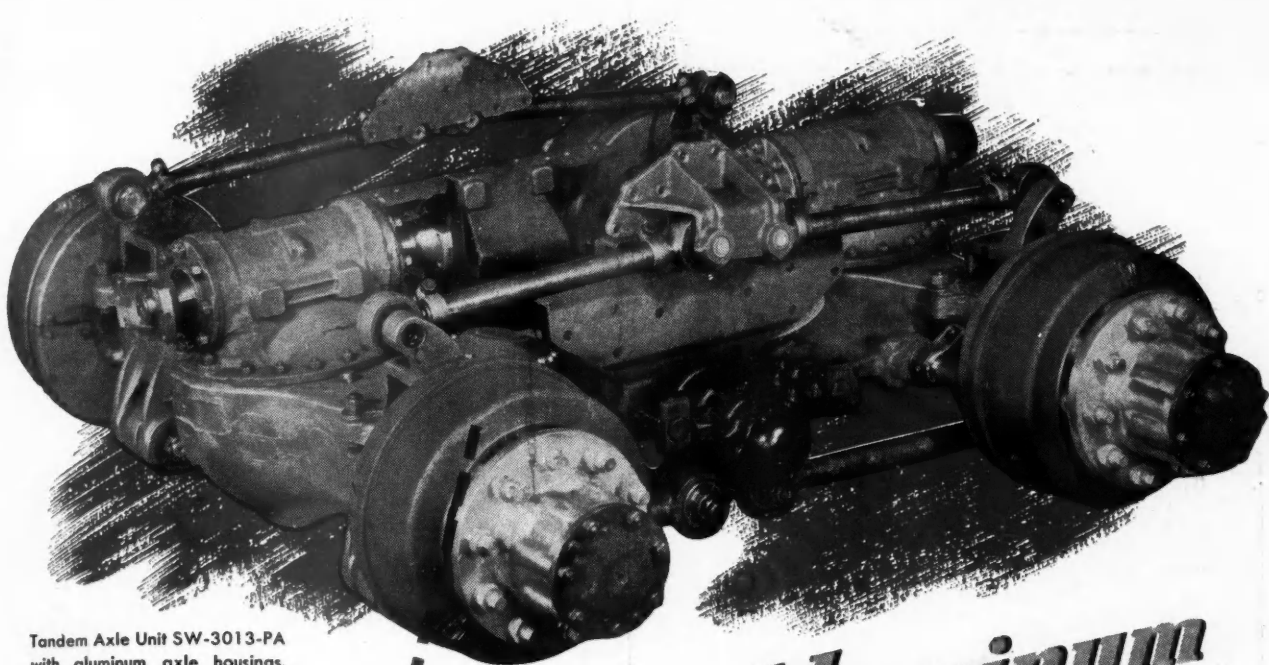
This faster clearing of Walter Snow Fighters comes from the great power and 100% traction supplied by the exclusive Four-Point Positive Drive. This provides maximum plowing speeds in pouring snow, opening drifts or travelling icy surfaces. There is no side-slipping, no stalling; no wheel spinning. Available in models from 125 hp. to 350 hp., with every type of equipment, to bring any snow conditions speedily under control. See your Walter distributor or write us for detailed literature.



**WALTER MOTOR TRUCK CO.** 1001-19 Irving Ave.  
Ridgewood 27, Queens, L. I., N. Y.

## **WALTER SNOW FIGHTERS**





Tandem Axle Unit SW-3013-PA  
with aluminum axle housings,  
hubs and brake shoes. A product  
of The Timken-Detroit Axle Co.

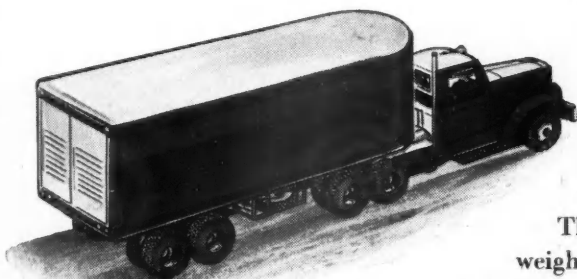
# *Timken uses Aluminum*

## TO MAKE THIS TOUGH BABY LIGHTER ON ITS FEET

400 pounds are saved by the use of aluminum housings, hubs and brake shoes in this heavy-duty tandem axle unit. Think how this cuts operating costs! Longer life for tires, easier riding, less strain on chassis and body parts! And more payload, too!

Proved dependable by actual use in other Timken axles, these parts of Alcoa Aluminum now are standard in the Timken tandem axle unit shown above. Fleet operators can now order equipment with these tough weight-saving axles.

This is one of many applications of aluminum to reduce weight in heavy-duty equipment that was contributed to by Alcoa experience and research. Information on other weight-saving uses of aluminum can be obtained through the nearby Alcoa office or by writing ALUMINUM COMPANY OF AMERICA, 2139 Gulf Building, Pittsburgh 19, Pennsylvania.

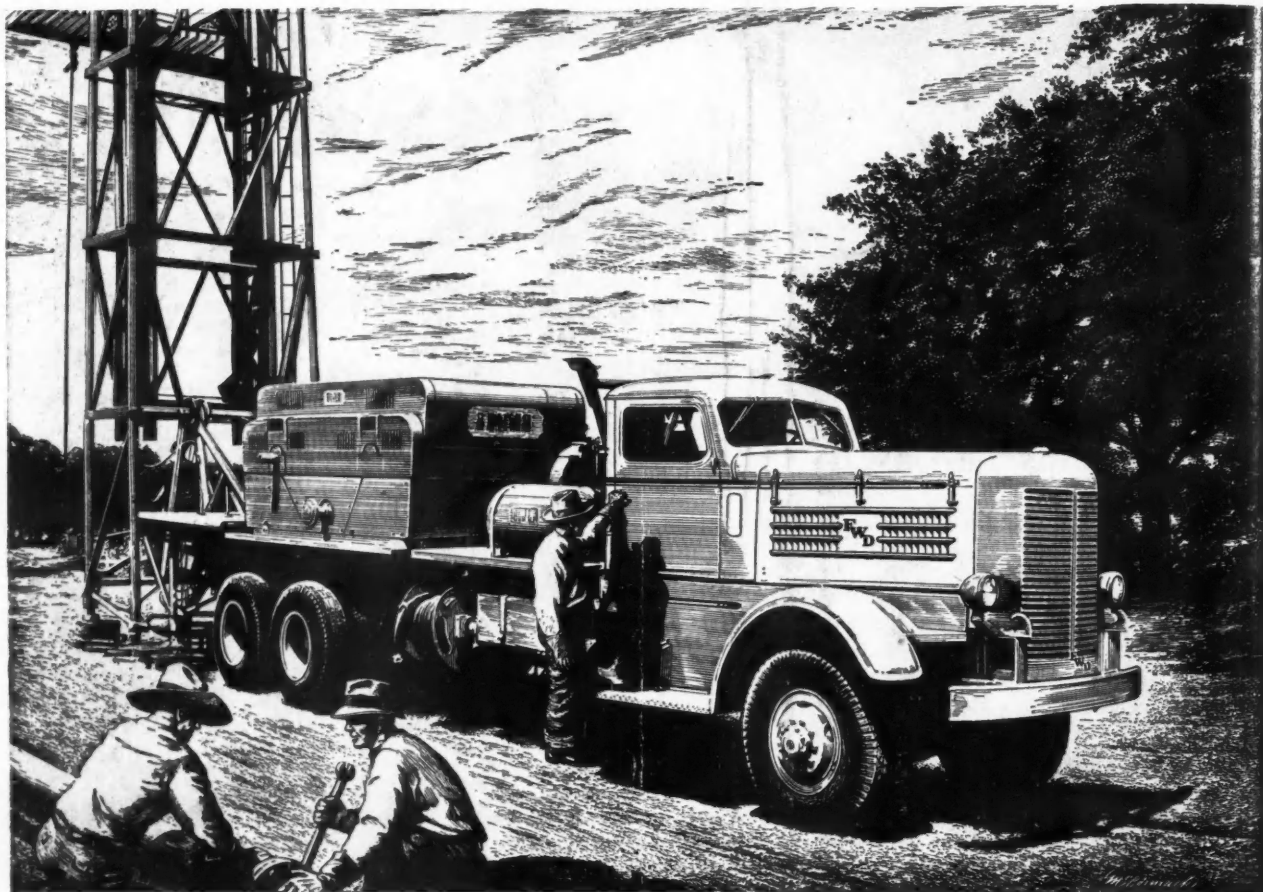


MORE people want  
MORE aluminum for  
MORE uses than ever

# ALCOA ALUMINUM



IN EVERY COMMERCIAL FORM

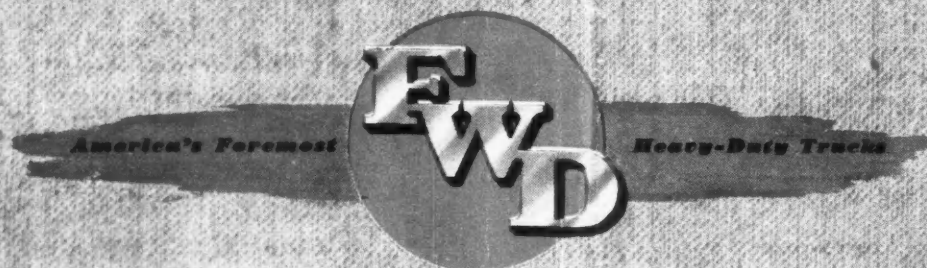


*FWD Trucks...  
preferred in the oil fields... as in other  
heavy-duty motor transport service*

Dependable, unfailing motor transport is demanded in oil-field service, where FWD four-wheel-drive and six-wheel-drive trucks are now recognized as standard heavy-duty equipment. • Some of the world's largest oil-field fleets are FWDs. With driving power fed to all wheels, FWD trucks are able to haul heavy



loads across open country to almost inaccessible locations, over terrain impassable to conventional trucks. • Hauling heavy loads at comparatively high speeds with greater safety on the open road is an added advantage, which makes FWD trucks valuable in all types of motor transport operations.



THE FOUR WHEEL DRIVE AUTO COMPANY, Clintonville, Wisconsin  
Canadian Factory: KITCHENER, ONTARIO